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GOLD COAST COLONY.

The Royal Society of ... Medicine
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REPORT

ON THE

Medical Department

FOR THE YEAR

1936.

GOLD COAST:

*Printed by the Government Printer at the Government Printing Department, Accra.
To be purchased from the Government Printing Department (Publications Branch),
Accra, Gold Coast Colony, and from the Crown Agents for the Colonies.
4 Millbank, London, S.W.1.*

1937.

Price—Four Shillings.

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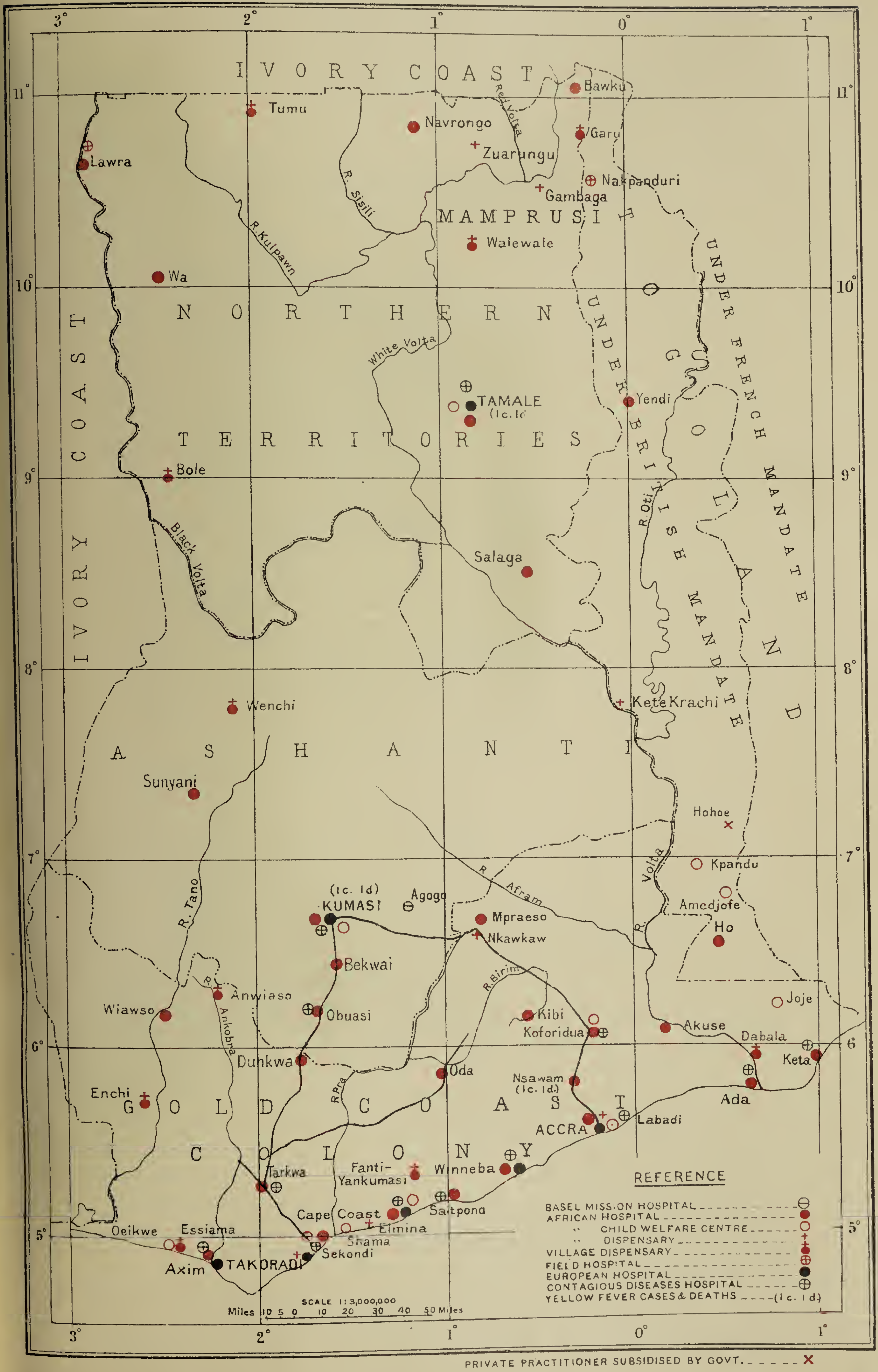
Map of the Gold Coast showing medical facilities and also areas where Yellow Fever occurred during the year.

THE GOLD COAST MEDICAL FACILITIES MAP.



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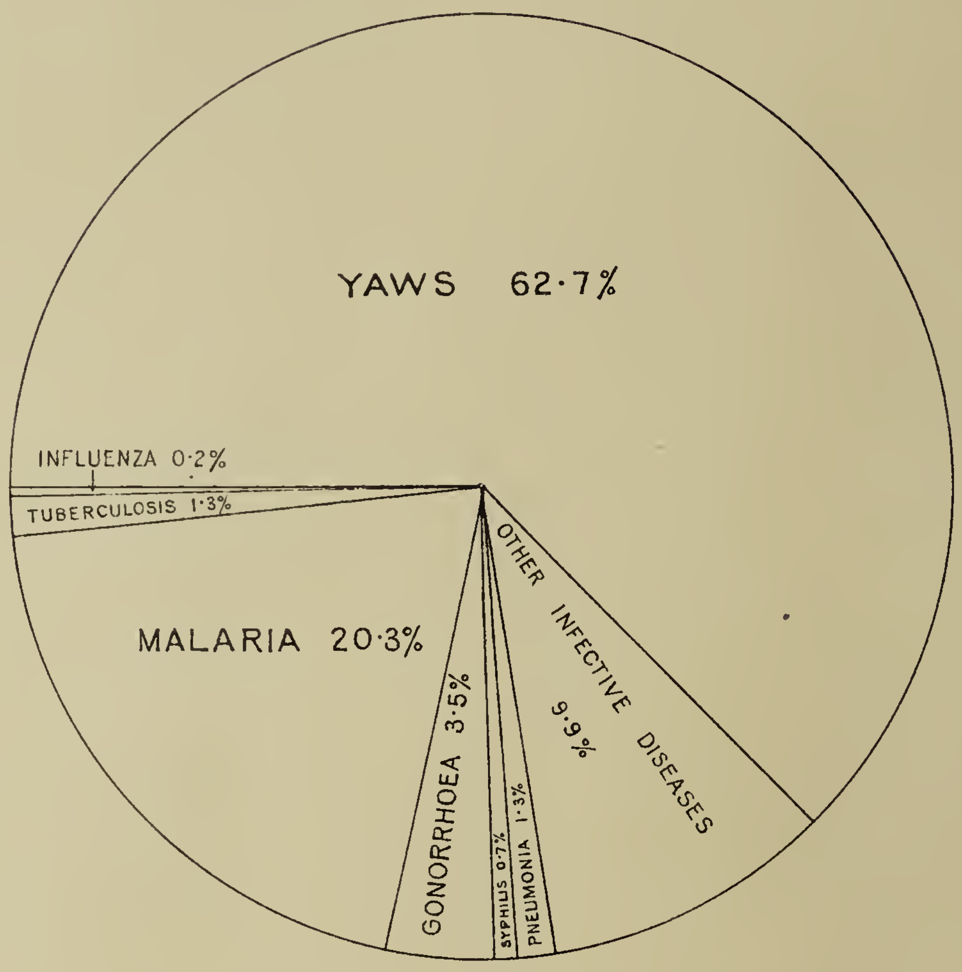
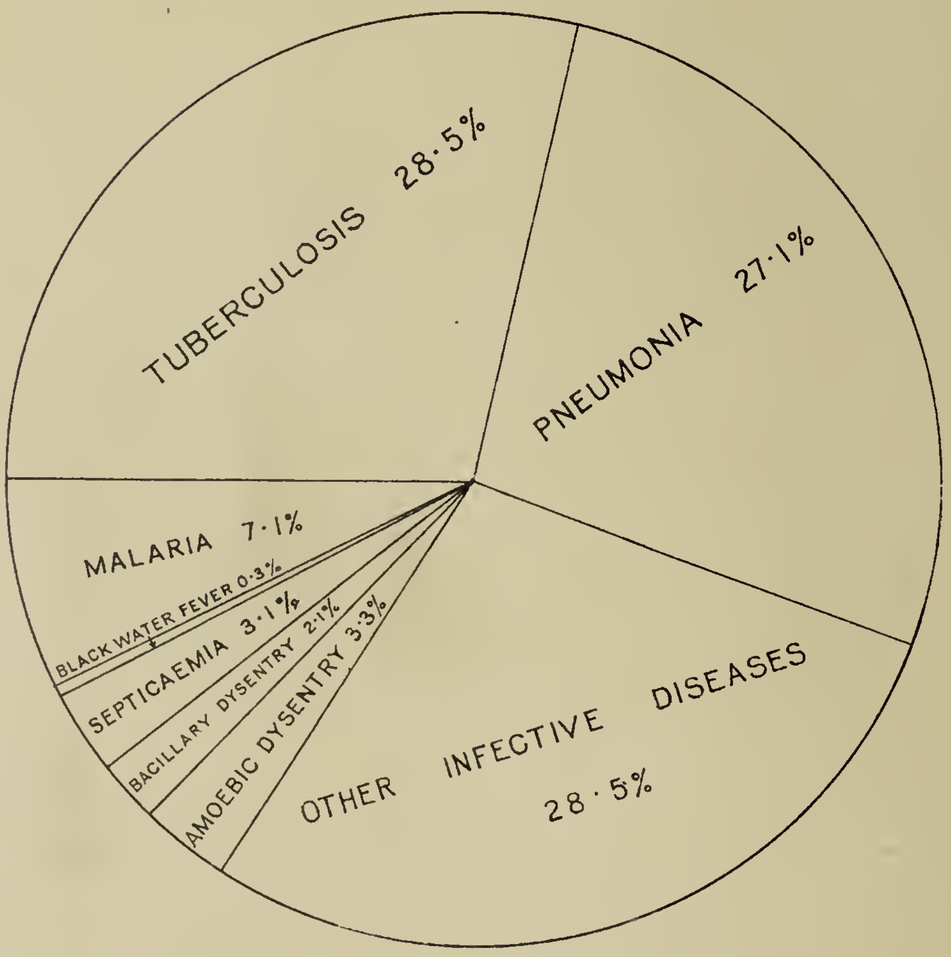
DIAGRAMS SHOWING THE INCIDENCE OF VARIOUS DISEASES

Infective Diseases, total cases treated in 1936 = 123,938.

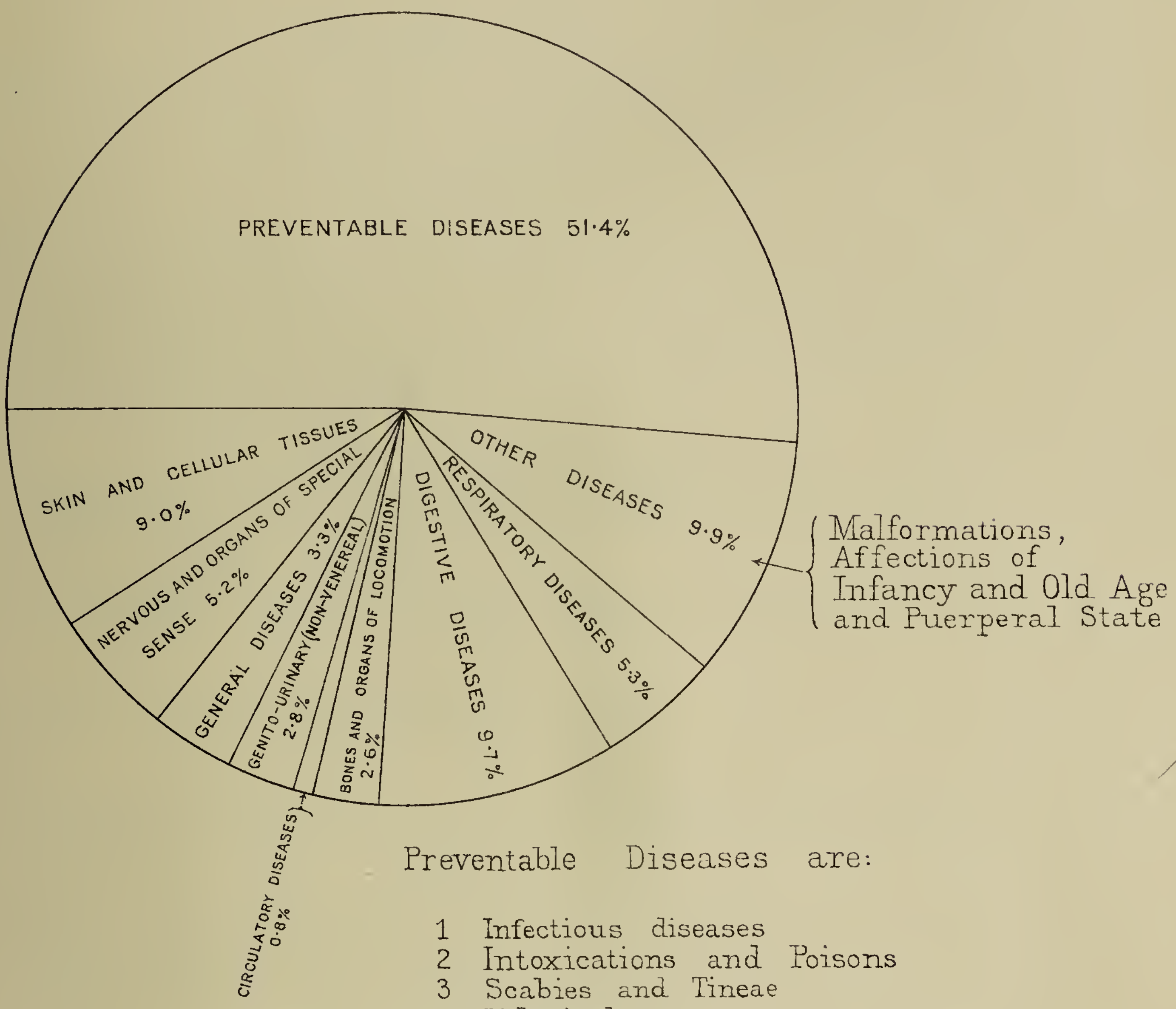


Infective diseases include all diseases under heading "Epidemic Endemic and Infectious Diseases" plus Pneumonia.

Total deaths in in-patients (infective diseases) = 870.



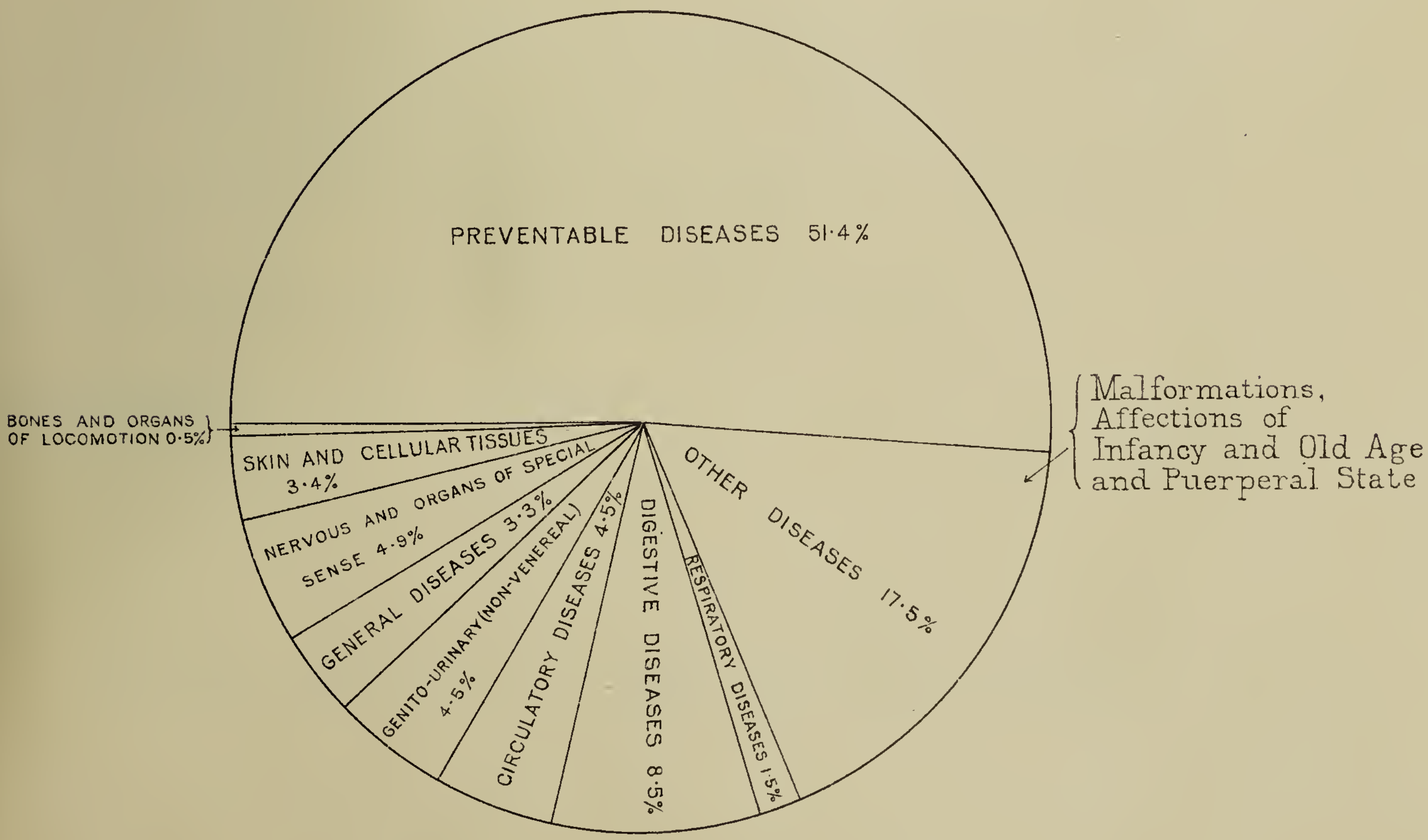
General Systemic and Preventable Diseases, total cases treated in 1936 = 311,211.



Preventable Diseases are:

1 Infectious diseases
2 Intoxications and Poisons
3 Scabies and Tineae
4 Helminths
5 Affections produced by external causes.

Total deaths in in-patients (all causes) = 2,082.



Annual Medical and Health Report for the Year 1936.

I.—ADMINISTRATION.

(a) Staff—Medical, Health and Laboratory Branches.

(*a*) MEDICAL BRANCH.

European Staff.

Appointments :—

Medical Officers : Dr. H. C. Foster, Dr. A. F. Fowler, Dr. J. S. McGregor, Dr. J. D. Reid, Dr. W. R. Phillips.

Nursing Sisters : Miss D. E. Rundall, Miss A. M. Douthwaite, Medical Stock Verifier : Mr. R. C. Broderick.

Promotions :—

Deputy Director of Medical Service : Dr. G. E. Craig, from Nigeria ; Assistant Director of Medical Service : Dr. W. J. McClintock.

Senior Specialist : Dr. A. C. Paterson.

Senior Medical Officers : Dr. V. E. Critien ; Dr. G. F. T. Saunders.

Senior Nursing Sister : Miss J. M. Garvey, from Nigeria.

Transfer :—

Medical Officer : Dr. A. D. Cust, from Health Branch.

Retirements :—

Assistant Director of Medical Service : Dr. G. H. Gallagher ; Senior Specialst : Dr. A. M. Franklin.

Senior Medical Officer : Dr. S. L. Brohier.

Medical Officer : Dr. M. T. Cassidy.

Senior Nursing Sister : Miss M. L. Brown.

Nursing Sisters : Miss C. G. Barchi, Miss Cecily Hubbard.

Deaths :—

Deputy Director of Medical Service : Dr. K. K. Grieve.

Medical Officer : Dr. J. W. Denoon.

African Staff.

Promotions :—

Medical Officer (Gold Coast) : Dr. J. E. Armah ; Chief Clerk : Mr. E. E. Bannerman from Audit Department ; 1st Division Clerk : Mr. E. J. Cobblah ; Chief Dispenser, Mr. J. Bart-Plange ; 1st Division Dispenser : Mr. L. W. Bensa ; Assistant Dispensers' Instructor : Mr. B. D. Jarrett ; Chief Nurse : Mr. E. B. Turkson ; 1st Division Nurses : Mr. E. H. L. Kpakpa-Quartey, Mr. A. J. R. King.

Senior Mental Nurses : Mr. J. F. Yankey, Mr. W. Q. M. Taylor, Mr. B. F. C. Reimmer.

Appointments :—

Junior Medical Officer (Gold Coast) Dr. C. H. Bannerman ;
2nd Division Clerks : Three.
Dispensers-in-Training : Two.
2nd Division Nurses : Twelve.
Nurses-in-Training : Thirty-four.
Mental Nurses : Six.
Laboratory Attendants : Three.
Staff Midwife : One.

Transfers :—

2nd Division Clerk : P. S. Annan, to Police Department.
2nd Division Dispenser : Mr. F. J. W. Cochrane, from Health Branch.

Deaths :—

2nd Division Nurse : One.
Laboratory Attendant : One.

Retirements :—

First Division Nurse : One.
2nd Division Nurses : Four.
Nurses-in-Training : Ten.
Mental Nurse : One.

(*b*) HEALTH BRANCH.

EUROPEAN STAFF.

Appointments :—

Deputy Director of Health Service : Dr. J. M. Mackay, M.C.
Medical Officer of Health : Dr. E. Cochrane.
Sanitary Superintendents : R. S. Donald, H. E. Lironi.

Promotions :—

Six Sanitary Superintendents promoted to Grade I : W. R. Lawless, G. Gilmore, R. G. Connolly, G. A. Scales, F. J. Buckle, N. S. Elliott.

Transfer :—

Dr. P. S. Selwyn-Clarke, M.C., M.D., to Nigeria.

AFRICAN STAFF.

Appointments :—

Sanitary Inspectors-in-Training : Four.
Market Clerks : Six.
Village Overseers : Two.

Retirements :—

C. M. Ogoe, Public Vaccinator ; H. D. Villars, Public Vaccinator ; A. S. Barnes, Senior Village Overseer.

Promotion :—

J. E. Prempeh, Senior Village Overseer.

(*c*) LABORATORY BRANCH.

AFRICAN STAFF.

TRYPANOSOMIASIS SURVEY.

Appointment :—

Laboratory Attendants : Three.

(b) Legislation affecting Public Health.

2. The following were among the more important Orders and Regulations during the period under review :—

- (*a*) Order No. 5 of 1936 under the Diseases of Animals Ordinance—declaring the whole of the Gold Coast an area infected with Rabies.
- (*b*) Order No. 13 of 1936 placing Anamabu under the Towns Ordinance.
- (*c*) Regulations under the Diseases of Animals Ordinance regarding dogs to be inoculated with anti-rabic vaccine were applied to Accra, Nsawam and Kumasi.
- (*d*) Order by the Governor No. 45 of 1936 under the Infectious Diseases Ordinance, declaring Kumasi District, Sunyani District and Wenchi District to be infected areas—smallpox.
- (*e*) Order No. 20 of 1936 placing Akwatia under the Towns Ordinance.
- (*f*) Orders applying the provisions of the Mining Health Areas Regulations to Konongo and Marlu.

(c) Finance.

3. The total revenue earned by the Medical Department (all branches) during the year 1936 amounted to £59,757 as compared with £55,719 in 1935.

4. The total ordinary (i.e. recurrent) expenditure for the Colony was £2,337,357.

5. The total ordinary (i.e. recurrent) expenditure for Medical Services (all branches) was £312,413 as compared with £293,431 in 1935. This figure is exclusive of the cost of buildings, e.g. hospitals, dispensaries, etc., and other public health works such as water supplies, town improvements, etc.

6. The ratio of the ordinary expenditure on Medical Services to the total expenditure of the Colony was 13·37 per cent as compared with a ratio of 11·27 per cent last year.

7. A detailed financial statement for the year appears at Return B of the returns.

8. The following table shows the ordinary (recurrent) expenditure under the Heads Medical, Health, and Research over five years, as compared with the total ordinary (recurrent) expenditure for the Colony.

TABLE I.

Branch.	1932–33. (Actual).	1933–34. (Actual).	1934. (Actual).	1935. (Actual).	1936. (Actual).	1937. (Estimated).
	£	£	£	£	£	£
Medical	155,248	155,199	159,414	169,000	180,768	201,248
Health	121,714	116,484	115,781	117,199	124,142	137,411
Research	8,148	6,441	7,063	7,232	7,503	7,706
Total	285,110	278,124	282,258	293,431	312,413	346,365
Colony Total	2,647,486	2,302,061	2,334,844	2,603,096	2,337,357	2,643,085
Percentage of total to Colony total	10·76	12·08	12·09	11·27	13·37	13·1

II.—PUBLIC HEALTH.

(c) General Remarks.

(I) HISTORICAL SURVEY.

9. In continuation of the procedure adopted in the Annual Report of the Medical Department of this Colony for the period 1934, the following represent the more important landmarks in 1935 and 1936.

1935.

No serious epidemic, but definite set-back in health of population as shown by increase in general and infant mortality rates.

Seven cases of yellow fever with four deaths in Africans.

Considerable increase in number of cases of sleeping sickness seen in Northern Territories. Special Commission met at Kumasi to consider and report on ways and means of investigating and combating the disease.

Staff of medical officers—other than administrative—numbered 66 on 1st January, 1935, and treated 273,476 patients in hospitals, dispensaries and welfare centres as compared with a staff of 90 on 1st April, 1929, during which year 249,476 patients were treated.

Start made on new 32-bed hospital at Tarkwa.

Ante-natal ward of 12 beds presented by the Gold Coast Red Cross to Accra Maternity Hospital.

New Mining Health Areas Regulations drawn up in consultation with Chamber of Mines governing sanitary control of mining and mining health areas, housing of labourers, etc.

Satisfactory progress made in some areas in housing for African and European mining community.

Considerable increase in immigration from neighbouring territories.

Gold Coast Colony represented at Pan-African Health Conference, Johannesburg.

1936.

No serious epidemic occurred during the year. There was a definite improvement in the general health of the population as shown by the decline in the general and infant mortality rates.

Three fatal cases of yellow fever occured in Africans. Deaths from sleeping sickness rose from 110 in 1935 to 182 in 1936. Also a considerable increase took place in cases seen in hospitals.

The staff of medical officers (all branches)—other than administrative—numbered 66 on the 1st January, 1936, and treated 311,211 patients in hospitals, dispensaries and welfare centres.

A new 32-bed hospital was completed at Tarkwa.

A hostel for midwives was erected at the Maternity Hospital, Accra.

The increase in the immigration of labourers still continues.

Draft Townships and Public Health Ordinances were prepared.

An unfortunate fire occurred at Cape Coast where the bungalow of the Senior Medical Officer and its European Hospital annexe were burned down. Fortunately no one was injured.

FACTORS AFFECTING PUBLIC HEALTH DURING 1936.

10. The serious set-back in health recorded in 1935 has been arrested, due for the most part probably to the improved financial and economic situation. There is cause for satisfaction in the birth and infantile mortality rates, and the incidence of serious infectious disease. Perhaps the most striking improvement took place n the health of the African officials. *See* Table X.

11. The immigration of under-nourished and diseased elements continues in many respects to be a danger. Owing to the continued prosperity in the mining areas and to the rise in the price of cocoa during the past season immigrants still continued to invade the Gold Coast from neighbouring territories. The Principal Registrar of Births and Deaths in his report for 1936 writes :—

> " Evidence is not wanting to indicate that the tide of immigration was higher in 1936 than in the preceding year. At a disinfecting station just outside Kumasi on the main North Road some 38,106 immigrants were appropriately treated as compared with 30,586 in 1935.
>
> " Other stations provide similar indications. Immigration overland frontiers is immeasurably greater than into the ports of the Gold Coast.
>
> " Two per centum of immigrants from the north were found to be suffering from trypanosomiasis."

12. As pointed out in last year's report the sanitary conditions in the rural areas and in the areas surrounding the mines are deteriorating and this will continue until the successful establishment of local sanitary authorities with sufficient powers. A draft Township Bill has been prepared and awaits approval : A draft Public Health Ordinance, in which the subjects of sanitation and housing are specially dealt with, has also been framed and is under consideration. Until the necessary legislation is passed little can be done in the rural areas.

Part III (*a*), Sections VI and VII and Appendix VI deal more extensively with this question.

13. The opening up of trade routes and increased motor transport facilities continue to play their rôle in the dissemination of disease. This is the inevitable result of development and can only be met by more vigorous efforts at prevention whether by facilities for treatment or other methods.

14. Malnutrition is always difficut to assess. In some districts of the Northern Territories the people are undoubtedly under-nourished. In certain areas the result of the impoverishment of the soil and in others the debilitating effects of disease and lack of satisfactory water supplies result in an inability to farm extensively. As a consequence there is a scarcity of food to carry on during the long dry season. This follows season after season until the inhabitants are in a miserably under-nourished condition. This particularly seen in areas around Tumu.

15. During March and April, 1936 an investigation into the water supplies of the Northern Territories was undertaken by the Public Works and Geological Departments with the ultimate object of establishing wells in those areas where water shortage is most acute. This is the subject of two valuable special reports in one volume, viz. :—

Reports of Investigations into the water supplies of the Northern Territories of the Gold Coast (Government Printing Department, Accra, 1937.)

16. Reference is also made to the vital necessity of providing proper water supplies for the purpose of the economic development of the north and to the need for establishing a permanent agricultural service there in order to stimulate " mixed farming " in a " Report on his visit to Nigeria, Gold Coast and Sierra Leone—October, 1935 to February, 1936 " by the Agricultural Adviser to the Secretary of State (F. A. Stockdale, K.C.M.G., C.B.E.—Colonial Advisory Council of Agriculture and Animal Health. Report C.A.C.270—Colonial Office, May, 1936). The intimate connection between pure and adequate water supplies, economic uplift and health requires no stressing, and much is hoped for from these investigations.

17. Some tribes are industrious farmers with a desire to improve their lot and travel to acquire farms at considerable distances from their own tribal homes, while others are lazy and improvident and only too willing to part with their lands for immediate gain even if this entails future poverty.

(*e*) SPECIFIC DISEASES : INSECT-BORNE CONDITIONS.

Malaria.

18. During the year 25,130 cases were recorded, as compared with 25,840 in 1935, that is to say, 8¾ per cent of all cases treated as compared with 9½ per cent in 1935.

19. The incidence of blackwater fever was practically unchanged, being 16 cases and three deaths in 1936 as compared with 17 cases and three deaths in 1935.

20. In August of 1935 a scheme for the distribution of quinine in the Colony and Ashanti through all post offices and postal agencies was introduced, the object being to make quinine more easily available to the people in the bush. A tube of 16 pink coloured tablets of quinine hydrochlor 4 grains is sold at 6d. per tube. The people can afford this price. A crown is stamped on one side of the tablet to show that it is Government quinine, and there is a grooved cross on the other so that the tablet may be broken into 2 grain and 1 grain portions for children. A wrapper round the tube contains directions in English, Ga, Twi, Fanti, Ewe and Hausa.

21. In the five months of 1935—13,612 tubes were sold ; 40,901 tubes were sold in 1936, and the demand is rapidly growing. Considering that liquid quinine is already extensively distributed at all hospitals, dispensaries and clinics throughout the country, this cannot be said to be an unsatisfactory beginning, and as the people are very intelligent and teachable, it is confidently hoped that consumption will increase steadily with a corresponding saving of child life.

22. A leaflet embodying a broadcast talk given by the Director of Medical Services in July, 1936, was printed and distributed by the Political Administration to every Chief in the country to be read to his people, and propaganda will be continued until everybody thoroughly understands the life-saving qualities of the drug.

23. A similar scheme, which has been preceded by propaganda, for the Northern Territories will be introduced in April, 1937. The tablet will be yellow, the wrapper will contain directions in English, Hausa and Dagomba, the price will be only 1d., as the people are poor, and distribution will be effected through the Native Administrations.

Yellow Fever.

24. Very few cases occurred. There were three cases with three deaths among Africans. No cases occurred among Europeans. There can be little doubt, however, that the disease persists in the uncontrolled villages outside the larger towns.

25. In view of the rarity with which severe yellow fever is seen in very young children the report of two interesting cases is included at Appendix II (*a*).

26. With regard to the possibility of the occurrence of jungle yellow fever in Africa, the following results (Findlay) of the examination of Gold Coast monkeys for immune bodies are of much interest :—

TABLE II.

Species.	No. of sera examined.	No. of sera protecting.	No. of sera not protecting.
Cercopithecus sp.	1	—	1
Erythrocebus patas	1	—	1
Colobus vellerosus	3	2	1
C. badius badius	6	3	3
Procolobus badius waldroni	4	2	2
Total	15	7	8
		nearly 50%	

27. Findlay, in a letter to the writer, stated that of 89 monkeys from Africa 20 have shown immune bodies.

28. Such results appear to indicate that Africa is faced with the same immense problem as South America, and that in the absence of adequate methods for its control, " jungle " yellow fever must be considered a possible permanent source of virus for the reinfection of our towns.

29. *Aedes aegypti* control everywhere but especially in our larger centres becomes a more urgent need than ever.

30. The existence of " jungle " yellow fever in the absence of *Aedes aegypti* further emphasises the need for the protection of the susceptible non-indigenous population, and recent work on immunisation with attenuated pantropic tissue culture virus alone without the addition of immune serum has been so encouraging that it justifies the hope that at last an easy field method of protection has been achieved. The importance of such a discovery to the world cannot be over-estimated.

Trypanosomiasis.

31. Sleeping sickness continues to be a cause of anxiety. The number of deaths registered rose from 110 in 1935 to 182 in 1936. The cases recorded (in and out-patients) in the hospitals were as follows :—

1935	2,885
1936	4,820

i.e., 179·3 per 10,000 cases of all diseases as compared with 177·8 in 1935.

32. The returns indicate an increase in Western Mamprussi, South-Eastern Gonja and in the vicinity of Dunkwa, especially in the villages along the road between Dunkwa and Bibiani where it is spread by Northern Territories boys looking for work in the mines. This last fact is significant.

The same observer working in the last seven months of 1930 at Dunkwa observed no cases there, while in the last six months of 1936, 38 cases were seen. These were as follows : " Ten local inhabitants, 18 Northern Territories people who had been over three years in the coastal area and ten Northern Territories boys who had lived on the coast under one year."

Mpræso also provided evidence of the increasing incidence of trypanosomiasis. During the year 1935 only eight cases were recorded while in 1936, 68 cases were treated. Of these 76 per cent were in Northern Territories immigrants.

33. Though the number of registered deaths from trypanosomiasis rose from 110 in 1935 to 182 in 1936 this rise may be due to the increase in the actual number of labourers from heavily infected areas in the North coming into registration areas to seek employment in the mines or cocoa farms.

34. The number of cases seen in the hospitals and dispensaries probably gives a more reliable indication of the incidence of the disease. This amounted to 4,820 or 179·3 per 10,000 cases of all diseases as compared with 3,885 or 177·8 per 10,000 of all diseases in 1935.

35. The increase in the number of cases seen would therefore appear to be due to the increase in the numbers of immigrant patients attending.

36. Although there was an actual decrease of 217 in the attendances at Lawra hospital for the treatment of trypanosomiasis, special surveys have revealed that in localized areas west of Tumu the incidence of the disease approximates to 35 per cent to 40 per cent of the inhabitants.

37. The number of cases attending Nakpanduri field hospital fell from 1,631 in 1935 to 1,165 in 1936, but this fall was offset by a rise at Gambaga from 52 to 572.

38. As already stated investigation at Kumasi showed an infection of 2 per cent in immigrants from the North.

39. Through the influence of the various Native Administrations which have recently been organised in the Northern Territories regularity in the treatment of local sufferers has been secured and the proportion of relapse cases is gratifyingly low.

40. The following table gives particulars of the numbers of cases treated in dispensaries, hospitals and treatment camps during the year :—

TABLE III.

Year.	Cases.	Deaths.	Incidence per 10,000 of all cases treated.*
1925–26	37	5	3·8
1926–27	67	11	6·4
1927–28	59	4	4·4
1928–29	94	18	5·3
1929–30	121	23	6·6
1930–31	224	16	10.5
1931–32	250	28	12·6
1932–33	685	45	33·1
1933–34	1,179	77	56·1
1934	1,973	112	91·3
1935	3,885	106	177·8
1936	4,820	132	179·3

41. The following table indicates the most important centres in which the disease showed a high incidence amongst the diseases treated :—

TABLE IV.

Station.	YEAR.	
	1935.	1936.
Nakpanduri	1,631	1,165
Lawra	1,161	944
Walewale	—	586
Gambaga	52	572
Kumasi	249	411
Bawku	194	274
Tamale	157	149
Sunyani	95	119
Wa	103	93

42. It is regretted that owing to the difficulty of obtaining an Entomologist, the recommendation of the Committee on Human Tryponosomiasis which met in July, 1935 (*vide* Appendix IV Annual Medical Report for 1935) to conduct a careful survey in the Northern Territories and Ashanti, could not at once be given effect to, but this difficulty has now been overcome and it is hoped to commence an extensive survey in 1937. Ten Europeans were infected with trypanosomiasis in 1936 as compared with seven in 1935.

OTHER CONDITIONS.

Yaws.

43. Yaws still continues to account for the greatest percentage of cases seen at the various hospitals and dispensaries. There is little doubt, however, that the disease is now well under control and the incidence of primary and secondary cases appears to be decreasing. During 1935 66,748 cases in all stages were seen as compared with 77,735 in 1936. (24·9 per cent of total cases treated as compared with 24·4 per cent for 1935.)

**N.B.*—In Table II at page 6 of Annual Report for 1935 the figure 100,000 is a typographical error for 10,000.

44. Many old cases for whose deformities little can be done continue to return for intravenous and intramuscular injections largely because of their general tonic effect.

Tuberculosis.

45. Tuberculosis constitutes one of the great dangers to which the people of this country are exposed and will continue to do so until, amongst other improvements, as for example, in nutrition, better housing conditions are established and until it is generally recognised that fresh air is as necessary when asleep as when awake. The spitting habit is prevalent and its dangers are not yet sufficiently realized.

46. An X-ray diagnostic unit will be installed in Tarkwa during 1937, where the disease is common in the mining areas. A special investigation into the incidence of silicosis and tuberculosis in the mining areas is planned to be begun in 1937.

TABLE V.

Year.	Cases treated.	Percentage mortality in in-patients.	Ratio per 100,000 of all cases treated.
1933–34	1,193	40	475·6
1934	1,269	43	496·1
1935	1,268	47	463·7
1936	1,600	45	514·4

Leprosy.

47. At Appendix III is a full and valuable report by Muir of his recent survey of anti-leprosy work in the Gold Coast.

48. A revision of our policy with regard to leprosy appears to be necessary.

49. The report for 1936 of the Empire Leprosy Relief Association is of such importance that it is considered worth while to quote some extracts :—

> " REVISION OF POLICY.
>
> " When the British Empire Leprosy Relief Association was founded in 1924 the chief emphasis was laid upon treatment. In fact, it was the realisation that leprosy is curable that stimulated the founding of the Association. During the last 12 years our knowledge of leprosy has advanced considerably. We know that the disease is much more frequent than was at first supposed and that there are probably as many as two million lepers within the bounds of the British Empire. Another important matter has recently been brought to light : while the majority of lepers do not spread the disease, yet a single infectious case will, in certain circumstances, disseminate the infection to large numbers of those with whom he comes in contact, the danger being specially great for young children who are particularly susceptible. Thus while 100 lepers may be placed under treatment and many of these under favourable circumstances may recover, a few of them—the highly contagious ones—may all the time be spreading the infection to another hundred healthy people.
>
> " In other words, without effective isolation of all—or at least the great majority—of the dangerous lepers, there is little hope of controlling and curtailing the disease.
>
> " On this account, while treatment still holds an important place in our programme, even more prominence must be given to isolation, and especially to prevention of infective lepers coming in contact with young children.
>
> " Another matter which has recently received prominence is the relationship of the economic and sanitary condition of the community to the spread of leprosy.
>
> * * *
>
> " Therefore the two main objectives in the campaign against leprosy must be :—
>
> " (*a*) Isolation of infectious cases from the community and especially from children ;

"(*b*) The education of the community with a view to improving their sanitary condition."

* * *

"In the recent visit of the Medical Secretary to West Africa he found two types of leper institutions. The first type was of the nature of a refuge where the unfortunate down-and-outs had congregated or been driven.

"The other type is that under the supervision of whole-time doctors and other workers—men and women with the missionary or altruistic spirit—who have given themselves to helping and restoring the leper.

"It is hoped that in future all leprosy institutions will be of this nature, and that those that have been begun on the wrong lines will be reorganised and placed under the right type of workers."

"These institutions, . . . are yet expensive and can only house a small proportion of the total leper population.

"The only hope of ultimately controlling and eradicating leprosy lies in educating the people at large in the nature of leprosy and how it may be prevented. The leper settlements may be used as centres of such education and training."

50. The suggestions of Muir in Part IV of his report on leprosy in the Gold Coast and the above views on policy merit our closest consideration and must be the basis of our future efforts.

51. A short report of the Ho Settlement appears at Appendix IV.

52. Early in the year one case of leprosy in a European was diagnosed.

Pneumonia.

53. Next to tuberculosis pneumonia is still the most important killing disease. The actual proportion of cases fell from 552 per 100,000 in 1935 to 509 in 1936. During the same period, however, the in-patients' case mortality increased slightly from 31 to 32·6 per cent.

Dysentery.

54. The incidence of dysentery in in and out-patients—most of which is of the amoebic variety—rose from 448 per 100,000 in 1935 to 591 in 1936 and the percentage case mortality rose slightly from 13 to 13·9 per cent.

Smallpox.

55. Although only one case of smallpox is recorded in station returns there was an outbreak in Western Ashanti in the Sunyani district which was quickly suppressed. It is believed to have come from French Territory. Fifty-nine cases were reported with nine deaths. Vaccination has been extensively carried out in this country for many years and there is little likelihood of any serious epidemic occurring.

Enteric.

56. One hundred and seven cases of the enteric group are recorded this year as against 66 in 1935, i.e. an increase of 62 per cent. Thirty-three cases were recorded from Nsawam alone. The main water supply of this town is the polluted river Densu. It is also the public washing and bathing place and the ultimate destination of all its surface drains.

Typhus.

57. In Appendix II (*b*) is noted what would appear to be the first recorded case of tropical typhus on the Gold Coast. Further reference is made to this case under the Heading IX "Scientific" (*a*) Annual Report of the Laboratory Service.

(*b*) **Vital Statistics.**

(I) GENERAL NATIVE POPULATION.

58. Comment has already been made on the improvement in the health of the African community. This conclusion has been drawn from records of the areas in which registration exists. The conditions in the rural areas remain unsatisfactory and it is difficult to see how these can improve until better sanitary control of these areas is obtained.

59. It is impossible to erect a health barrier round a town whereby endemic infectious disease occurring in uncontrolled rural areas surrounding the town can be totally excluded.

60. This factor increases enormously in importance where, as on the Gold Coast, there is a constant movement of native population from country to town.

As Anning writes (Vol. LVI No. 12 of *Journal of the Royal Sanitary Institute*) under the heading " Tropical Sanitation—The Town " :—

> " The incidence of disease in the town is directly dependent upon the conditions obtaining in the surrounding districts ; in fact, especially in the tropics, the town can never stand completely isolated from its surrounding rural areas."

(II) GENERAL EUROPEAN POPULATION.

61. An examination of the records shows a general increase since 1934 in the death and invaliding rates for all Europeans. The long and monotonous tours and the increasing pressure at which work is now carried on everywhere in this country are surely factors contributing to the increase in the invaliding rate. 1936 was a particularly unfortunate year for European officials, the death rate per 1,000 being 13·2 as compared with 5·9, the average for the ten-year period 1924–34.

62. The continued prosperity in the mining industry and the improvement in the general trade of the country resulted in an increase of 359 Europeans.

The actual distribution is seen in the table below :—

TABLE VI.

	Numbers resident in.		Increase or decrease.
	1935.	1936.	
(i) Government officials	832	865	+ 33
(ii) Employees of trading firms	1,500	1,622	+122
(iii) Employees of mining companies	1,363	1,541	+178
(iv) Missionaries	274	300	+ 26
Totals	3,969	4,328	+359

(III) EUROPEAN OFFICIALS.

63. The table of " Sick and Invaliding and Death-rates " requires comment.

64. The average sick time to each resident has not varied greatly since 1930. The percentage of invalidings to the average number resident is definitely over the average of the previous five years, (namely 6·5) although there has been a slight fall from the figure for 1936.

65. The percentage of deaths to the average number resident was six times that of 1935 and over three times that of the previous five years. An unhappy year.

66. It should be noted, however, that no death out of the total of eight could be attributed to purely tropical conditions. The statement below elucidates the above remarks.

TABLE OF COMPARISON.

	1931–32.	1932–33.	1933–34.	1934.	1935.	1936.	Average 1931–35.
Percentage of invalidings to average number resident ...	7·1	5.6	6.8	4.8	8.4	7.9	6.5
Percentage of deaths to average number resident ...	0.85	0.15	0.48	0.33	0.2	1.3	0.4
Average sick time to each resident	8.25	8.1	7.8	8.2	9.8	8.2	8·43

TABLE VII.

SICK, INVALIDING AND DEATH-RATES.

	1934.	1935.	1936.
Total number of officials resident	847	832	865
Average number resident	599	594	607
Total number on the sick list	533	606	487
Total number of days on the sick list	4,918	5,822	5,001
Average daily number on sick list	13.5	15.9	13.6
Average number of days on sick list for each patient	9.2	9.6	10.3
Average sick time to each resident	8.2	9.8	8.2
Total number invalided	29	50	48
Percentage of invalidings to total resident	3.4	6.0	5.5
Percentage of invalidings to average number resident	4.8	8.4	7.9
Total deaths	2	1	8
Percentage of deaths to total residents	0.2	0.1	0.9
Percentage of deaths to average number residents...	0.3	0.2	1.3

TABLE VIII.

INVALIDING AND DEATH-RATES.

	Average number resident.	Invalided.	Percentage invalided.	Died.	Death-rate per 1,000.
1933–34	617	42	6·8	3	4·8
1934	599	29	4.8	2	3.3
1935	594	50	8.4	1	1.7
1936	607	48	7.9	8	13.2
Average for period	604	42	6·9	3·5	5·7

67. The causes of deaths of European officials during 1936 were :—

Motor accident...	3	Obstructive jaundice ...	1
Septicæmia	1	Paratyphoid	1
Broncho-pneumonia	1	Acute cardiac dilatation ...	1

68. The causes of invalidings of European officials during 1936 were :—

Locomotor ataxia	1	Myocardial degeneration ...	1
Malaria	5	Debility	6
Arthritis	2	Delusional insanity	1
Catarrhal jaundice	1	Carcinoma	1
Aphasia	1	Neurasthenia	1
Cardiac disease	1	Chronic indigestion ...	1
Pyæmia	1	Hæmoptysis	1
Pharyngitis, bronchitis and pleurisy	1	Myocarditis	2
Renal calculus	1	Malaria cachexia	1
Appendicitis	1	Paratyphoid	1
Tonsillitis	1	Diabetes	2
Gastritis	1	Pneumothorax	1
Insomnia	3	Renal colic	1
Arterial hypotension	1	Neuritis	1
Gastralgia, chronic	1	Cystic tumour	1
Bronchitis and asthma ...	1	Bacilluria	1
Endocarditis	1	Chronic appendicitis ...	1
Total ...	48		

69. Six cases of invaliding were purely tropical in character. Ten were possibly due to a combination of tropical disease and climatic conditions.

(IV) EUROPEAN NON-OFFICIALS.

70. The death-rate increased from 4·7 per 1,000 in 1935 to 6·1 in 1936. The average for the previous five years was 6·1. The invaliding rate has gone up from 15·1 in 1934, and 20·1 in 1935, to 26·2. The average for the previous five years was 18·36.

TABLE IX.

1935.		Number.	Deaths.	Invalided.	Death-rate per 1,000.	Invaliding rate per 1,000.
Merchants	males	957	2	14	2·1	14·6
	females	543	3	2	5.5	3.7
Mining Companies	males	1,306	10	43	7.6	32.9
	females	57	—	—	—	—
Missionaries ...	males	175	—	2	—	11.4
	females	99	—	2	—	20.2
Totals and averages		3,137	15	63	4.7	20.1
1936.						
Merchants	males	1,073	10	17	9.3	15.8
	females	549	1	6	1.8	10.9
Mining Companies	males	1,446	6	55	4.1	38.0
	females	95	1	1	10.5	10.5
Missionaries ...	males	180	2	7	11.1	38.9
	females	120	—	5	—	41.6
Totals and averages		3,463	20	91	6·1	26·2

71. The causes of invaliding of non-official Europeans during the year were :—

Malaria	10	Valvular disease of the heart	1
Debility...	9	Perforated gastric ulcer ...	1
Cervical erosion	1	Myocarditis	1
Diabetes mellitus	1	Acute endometritis	1
Pyelitis (B.coli)	1	Pulmonary tuberculosis ...	4
Hæmatemesis (gastric ulcer) ...	1	Renal calculus	1
Shock from fall	1	Pregnancy complicated ...	1
Septicæmia	1	Arthritis	1
Cholecystitis	1	Blackwater fever	3
Enteritis and colitis	1	Neurasthenia	6
Mental derangement	2	Catarrhal jaundice	1
Paralysis	1	Paratyphoid	1
Dysentery and malaria ...	1	Chronic bronchitis	1
Asthenia	1	Renal colic	1
Leg injury through accident ...	2	Disordered action of heart ...	1
Suspected sleeping sickness ...	1	Phthisis	1
Hernia	1	Fracture patella	1
Blood poisoning	1	Colitis	1
Nephritis	1	Hæmaturia	1
Tropical bubo	1	Vesical fistula	1
Carcinoma of stomach ...	1	Bronchial asthma	1
Anæmia following blackwater fever	1	Debility following dysentery	1
Carious teeth and gastritis ...	1	Epididymitis (G.C.)	1
Urethritis	1	Acute cellulitis of leg ...	1
Dysentery	1	Hæmoptysis	1
Abdominal pain	1	Gastric ulcer	1
Chronic bronchitis	1	Contusion of scrotum ...	1
Sleeping sickness	1	Stokes-adams disease ...	1
Chronic appendicitis	1	Leprosy	1
Floating kidney	1	Cystitis threatened with pyelitis	1
Bronchitis	1	Prostatitis	1

Total ... 91

72. The causes of deaths of non-official Europeans were :—

Perforated duodenal ulcer	1
Meningitis	2
Irreducible hernia	1
Thrombosis of cavernous sinus	1
Pyelitis	1
Blackwater fever	2
Accident in mine	1
Pernicious anæmia	1
Myocardial degeneration	1
Kidney abscess	1
Bacillary dysentery	1
Acute appendicitis	1
Typhoid fever, Pneumonia and cardiac syncope	1
Cancer of lung	1
Food poisoning	1
Peritonitis following appendicitis	1
Septicæmia	1
Fracture left femur, Skull and left collar bone	1
Total	20

(V) AFRICAN OFFICIALS.

73. Table X shows that there was an improvement in the health of African officials. The percentage of invalidings to the average number resident fell from 0·7 in 1935 to 0·6 in 1936. Total deaths in 1935 were 21 and in 1936 were 14.

74. The percentage of deaths to the average number resident fell from 0·6 in 1935 to 0·38 in 1936.

75. During the financial crisis the health of African officials suffered owing to the fact that the employed members of a family had to bear the burden of supporting the unemployed ones. The relief from this strain owing to the return of prosperity is reflected in the improved returns.

TABLE X.

	1934.	1935.	1936.
Total number of officials resident	3,756	3,666	3,751
Average number resident	3,648	3,540	3,623
Total number on sick list	1,058	1,297	1,182
Total number of days on sick list	11,445	13,229	11,892
Average daily number on sick list	31·3	36.2	32·4
Percentage of sick to average number resident	0.8	1.1	0.6
Average number of days on sick list for each patient	10.8	10.2	10.1
Average sick time to each resident	3.1	3.7	3.3
Total number invalided	30	25	24
Percentage of invalidings to total resident	0.8	0.7	0.6
Percentage of invalidings to average number resident	0.8	0.7	0.6
Total deaths	12	21	14
Percentage of deaths to total resident	0·3	0·6	0·37
Percentage of deaths to average number resident	0·3	0·6	0·38

(VI) VITAL STATISTICS OF THIRTY-FIVE REGISTRATION DISTRICTS.

TABLE XI.

Population and Rates of Registration Districts.

	Population.					Births.		Birth-rate.		Deaths		Death-rate.	
	1921.	1931.			Mid-year 1936.	1935.	1936.	1935.	1936.	1935.	1936.	1935.	1936.
		Males.	Females.	Totals.									
Abosso	—	3,994	2,587	6,581	6,581*	128	202	19·4	30·7	241	212	36·6	32·2
Aburi	—	2,034	1,666	3,700	3,700*	180	200	48.6	54.1	76	79	20.5	21.4
Accra and Labadi	41,124	32,833	27,893	60,726	71,016	2,772	2,969	40.1	41.8	1,696	1,729	24.6	24.4
Ada and Ada Foah	5,907	2,196	2,254	4,450	4,450*	234	180	52.6	40.5	177	112	39.8	25.2
Akuse	4,145	1,784	1,874	3,658	3,658*	95	132	26.0	36.1	72	62	19.7	16.9
Axim	3,781	2,367	2,166	4,533	4,927	135	183	27.8	37.1	138	167	28.4	33.9
Bekwai	—	2,085	1,654	3,739	3,739*	193	197	51.6	52.7	74	101	19.8	27.0
Bawku	—	2,057	1,695	3,752	3,752	39	123	—	32.8	42	109	—	29.1
Cape Coast	14,921	9,603	8,082	17,685	19,134	553	609	29.3	31.8	412	365	21.8	19.1
Dodowa	1,061	1,145	1,077	2,222	2,831	131	119	48.3	42.0	93	73	34.3	25.8
Dunkwa	2,005	1,826	2,134	3,960	4,989	121	119	25.3	23.9	145	85	30.3	17.0
Elmina	5,262	2,186	2,611	4,797	4,797*	281	222	58.5	46.3	136	140	28.4	29.2
Ho	3,142	1,747	1,660	3,407	3,549	129	143	36.6	40.3	73	97	20.7	27.3
Keta	—	3,063	3,342	6,405	6,405*	276	354	43.1	55.3	94	131	14.7	20.5
Kintampo	—	1,339	976	2,315	2,315*	66	62	28.5	26.8	111	92	47.9	39.7
Koforidua	5,364	5,816	4,713	10,529	13,243	446	630	35.1	47.6	418	406	32.9	30.7
Kpong	3,285	1,427	1,477	2,904	2,904*	90	105	31.0	36.2	79	65	27.2	22.4
Kumasi	23,694	21,219	14,610	35,829	42,203	888	968	21.6	22.9	861	922	21.0	21.9
Mampong (Ashanti)	2,272	1,386	1,090	2,476	2,581	45	128	—	49.6	41	75	—	29.1
Nsawam	6,143	4,916	3,966	8,882	10,321	159	271	15.8	26.3	210	267	20.9	25.9
Obuasi	3,917	4,746	2,852	7,598	9,530	137	128	15.0	13.4	290	258	31.7	27.1
Oda	—	3,691	2,448	6,139	6,139*	147	163	23.9	26.6	171	166	27.9	27.0
Prestea	—	1,667	822	2,489	2,489*	130	127	52.2	51.0	175	177	70.3	71.1
Salaga	3,207	2,630	2,196	4,826	5,677	181	215	32.9	37.9	199	171	36.1	30.1
Saltpond	6,342	3,277	3,092	6,369	6,385	324	280	50.8	43.9	151	173	23.7	27.1
Sekondi	9,500	10,020	6,933	16,953	20,864	444	408	22.1	19.6	307	282	15.3	13.5
Somanya	3,428	1,213	1,438	2,651	2,651*	151	224	57.0	84.5	141	84	53.2	31.7
Sunyani	—	1,568	1,243	2,811	2,811*	133	114	47.3	40.6	145	144	51.6	51.2
Takoradi	—	3,393	2,085	5,478	5,478*	160	140	29.2	25.6	45	65	8.2	11.9
Tamale	3,901	7,045	5 896	12,941	17,687	593	535	35.3	30.3	240	249	14.3	14.1
Tarkwa	2,671	2,012	1,309	3,321	3,662	109	99	30.3	27.0	308	289	85.6	78.9
Wa	2,810	2,557	2,666	5,223	6,488	54	195	—	30.1	53	174	—	26.8
Wenchi	4,994	2,849	2,460	5,309	5,477	63	148	—	27.0	136	192	—	35.1
Winneba	6,980	6,033	4,893	10,926	13,000	519	530	41.2	40.8	281	289	22.3	22.2
Totals and weighted averages	169,856	157,724	127,860	285,584	325,433	10,106	11,222	33·0	34·5	7,831	8,002	25·5	24·5

* In the case of towns marked with an asterisk the census population at April 1931, is taken in lieu of an estimated mid-year population either because the population of such towns were not enumerated in 1921 or because their populations are decreasing.

(VII) TABLE SHOWING THE BIRTHS, DEATHS AND INFANT MORTALITY RATE AT SIX PRINCIPAL TOWNS.

TABLE XII.

Station.	1932.			1933.			1934.			1935.			1936.		
	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.
Accra and Labadi ...	2,576	1,282	117	2,799	1,476	117	2,827	1,514	113	2,772	1,696	140	2,969	1,729	118
Cape Coast	480	359	83	562	353	103	611	341	76	553	412	110	609	365	98
Koforidua	450	272	95	480	270	85	390	259	107	446	418	188	630	406	127
Kumasi	96	658	115	898	770	112	957	782	117	888	861	148	968	922	139
Sekondi	400	209	42	371	232	72	398	275	110	444	307	83	408	282	76
Tamale	635	158	26	784	187	30	504	211	45	593	240	52	535	249	48
Total	4,637	2,938	—	5,894	3,288	—	5,687	3,382	—	5,696	3,934	—	6,119	3,953	—

III.—HYGIENE AND SANITATION.

(a) General review of work done and progress made.

(I) PREVENTIVE MEASURES.

(i) MOSQUITO AND INSECT-BORNE DISEASES.

(*a*) *Malaria.*

76. Some* 610 deaths were registered representing 7·6 per centum of all deaths registered, compared with 491 and 6·3 per centum in 1935. The death-rate per 100,000 persons living amounted to 187.

77. As in the past, malaria proved once more to be the most important and widespread factor making for ill-health, particularly among the younger members of the community.

Most of the labour inefficiency and loss of time is still due to this disease.

In every febrile condition malaria has first of all to be carefully excluded before a diagnosis can safely be made.

78. Anti-malaria methods in the Gold Coast present unusual difficulties. The chief mosquito vectors—*Anopheles gambiae* and *Anopheles funestus*—are almost everywhere present, and their concentration rises during the rains.

They are so catholic in their choice of breeding places that few areas, save in the dense forest, fail to provide suitable " nurseries " for them. The clearing of the heavy forest must be considered as continually opening up fresh fields for their propagation.

79. During recent years little extension of permanent drainage schemes can be recorded. In 1935 an important advance was made at Takoradi when the Butuah Lagoon was provided with a permanent outfall. Extensive repairs to existing concrete drainage systems were carried out during the year.

80. Most stations report steady progress in filling low-lying areas of limited extent, the provision of graded earth gutters fed by herring-bone collaterals, vertical drainage and the protection of basins by means of contour drains.

Earth gutters are, however, costly to maintain. Falls and the formation of pot-holes are the rule. Work on their maintenance is of a necessity unremitting.

There is a great tendency as the years pass to increase the number of collateral feeders. These often scour out to a marked degree, and the end result proves far from satisfactory. Subsoil drainage methods, owing to the lack of cheap, local, agricultural tile-pipes are not adopted as generally as they should.

81. In some areas tree planting has been of benefit, and this method should be brought into more general use.

82. The spleen rates reported from the various centres vary but little from year to year. An average spleen rate of some 20 per centum is returned from the schools of the larger centres. In Koforidua, where a spleen rate of 19·5 is returned for school-children, the rates for infants and children attending the Welfare Centre are as follows: under one month nil; 1–6 months 52·7; 6–12 months 81·7; 1–5 years 83·5; 5 years and upwards 74.2.

All observers make mention of the rapid decline in the spleen rates in the older grades of school-children.

83. The sale of quinine at cost price in all post offices is well being taken advantage of. This provision, it is considered, is doing much to alleviate the worst ravages of the disease particularly in the very young, and at the same time does not result in delaying the acquisition of a degree of " tolerance " to the scourge.

84. From time to time discussion has arisen with respect to the effective " complete " mosquito-proofing of bungalows, and the production of a standard plan of such a bungalow is in process of elaboration for erection in certain areas where anti-malarial measures are prohibitive from a financial viewpoint. Anti-malarial control, possibly, is not so widespread as formerly round many centres, and for this reason it is thought that the question of protection may become more insistent in the future. As extended funds become available, more

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* Statistics in this report are obtained from 35 registration areas which represent some 325,433 head of population out of a total of 3,617,126 for the whole of the Gold Coast.

have to be deviated to growing centres of industry, and the recovery of ground partially lost in the vicinity of the older established centres is difficult to recover. The question of " complete "' protection is a vexed one for the personal factor regarding due care, the training and supervision of the house staff and reaction to the " proofed " conditions of life vary within wide limits.

(*b*) *Yellow Fever.*

85. The incidence of yellow fever from 1921 to 1936 is shown in Table XIII below.

TABLE XIII.

Year.	Cases.	Deaths.	Percentage mortality.
1921	4	4	100.0
1922	10	8	80.0
1923	19	16	84.2
1924	8	6	75.0
1925	7	5	57.1
1926	65	18	27.7
1927	107	40	37.4
1928	2	2	100.0
1929	—	—	—
1930	2	1	50.0
1931	17	12	70.6
1932	4	—	—
1933	7	4	57.1
1934	2	2	100.0
1935	7	4	57.1
1936	3	3	100.0

86. During 1936 three African cases occurred. All proved fatal. One case eventuated in the Colony, one in Ashanti and one in the Northern Territories.

87. As in previous years, stress must again be laid on the fact that the cases which came to light must represent but a small percentage of those which actually occur up and down the country. The whole of the Gold Coast is an endemic area, and we have little knowledge of the general incidence of the disease.

88. Mosquito control is confined to the ports, the larger centres and some of the larger towns and villages situated on the more important trade routes.

89. In the centres where control is possible the desideratum aimed at is the inspection of all premises once in every seven to ten days. In comparatively few centres is this ideal attained.

90. To increase the frequency of inspection in several large centres, " learners " and " mosquito inspectors," delegated under the Mosquitoes' Ordinance, have been taken on during the last few years in increasing numbers. These workers have few avenues for promotion open to them and, in time, they become dispirited and their work suffers accordingly. " House to house " inspection is an exacting work, and careless inspection has to be guarded against by well-organised " check " and " cross " inspections.

91. Mosquito control requires to be extended, but with the existing available staff it is considered that the limit of control has almost been reached.

92. No town in the Gold Coast can be designated as " *Aedes* free," and sporadic cases must be anticipated from time to time even in the best controlled centres. Epidemic spread, however, is not to be apprehended.

93. Surrounding all our large centres are numerous villages with a larval index of from 10 to 100 per centum. Cases in the " infective " stage drift from these villages into the centres, and, if they take up their abode near one of the sparsely scattered foci of *Aedes* breeding, sporadic " return " cases are inevitable.

94. Such foci of *Aedes* breeding often eventuate in locked premises, or locked rooms in otherwise " open " premises, in fetish houses which often abound in certain areas of a town, or in a concealed, forgotten and only partially protected, ancient well.

The mutilation of trees in the larger centres resulting from the lack of organised control in tree planting, protection and pruning is, it is considered, laying the foundation for trouble in the future.

95. The difficulties of house inspection are legion in the curious agglomerations constituting a Gold Coast town. In the largest centre, Accra, important mercantile premises, prisons, high-class stores, etc., are to be found " cheek-by-jowl " with extensive slums occupied by illiterate fisherfolk.

This admixture of civilisation and primitive conditions is becoming increasingly difficult to contend with.

96. The results of the total number of inspections carried out by the Health Branch staff during 1936 are shown below.

TABLE XIV.

Number of Inspections.		Number of premises with larvae.		Larval Index.	
1935.	1936.	1935.	1936.	1935.	1936.
2,262.565	2,407,937	11,880	11,638	0·52	0·48

97. The racial incidence and case mortality is shown in Table XV below.

TABLE XV.

	COLONY.			ASHANTI.			NORTHERN TERRITORIES.		
	Cases.	Deaths.	Mortality.	Cases.	Deaths.	Mortality.	Cases.	Deaths.	Mortality.
AFRICAN.									
Males ...	1	1	100	1	1	100	1	1	100
Females ...	—	—	—	—	—	—	—	—	—
Total ...	1	1	100	1	1	100	1	1	100

98. The danger resulting from the overgrown, " tin, bottle and snail-shell " strewn perimeters of numerous large villages on important trade routes has often been stressed in the past. This danger is as great and possibly greater than ever before constituting a menace of the first order when the spread of yellow fever along land trade routes is considered.

99. Considerable anxiety is still felt for the safety of the large number of Europeans engaged in the mining industry.

This anxiety will continue until the industry stabilises and the initial boom period is over, and until all mining areas and—what is probably more important—the rural areas surrounding these are properly organised and sanitated.

100. Anti-amaryl aerodromes at Accra and Takoradi will soon be ready for regular traffic. It is not yet possible to assess properly the difficulties which will be met with in their efficient sanitary control. It is considered not improbable that the drainage away of storm water, running rapidly off the extensive " tarmet " surface of the runways, from surrounding low-lying or flat areas may be an undertaking involving considerable extra expense.

101. The greater danger of the spread of yellow fever steadily and slowly along the rapidly linking-up, land trade routes as compared with that likely to result from aerial navigation has been stressed previously.

102. The question as to whether a " bush " type of yellow fever exists in West Africa is still uncertain. From a public health standpoint this question does not loom very largely at present. The eradication of the " urban " type is not yet in sight, and as this desideratum depends so much on the education and the co-operation of the people it would appear that there is little immediate urgency for a final solution in so far as West African is concerned.

103. Preventive measures taken during the year under review may briefly be summarised as follows :—

(*a*) Carefully organised inspections of all premises in the larger centres, ports and more important smaller towns and large villages on important trade routes to control the domestic breeding of mosquitoes and keep the larval index below the danger margin.

(*b*) The living of European officials in carefully controlled residential areas, and the encouragement of trading firms to take up building plots in these areas for the erection of residences for their European staff The carefully controlled residential area with its protective " building free zone " is still considered to be the most important safeguard for the health of the " susceptible " European in the Gold Coast to-day, and must continue to be so for many years to come. Nothing should be permitted to weaken its defences for not only is it a bulwark protecting the officials' and resident traders' health, but it affords a sure refuge to which the European non-immune living outside such areas can flee during outbreaks of serious epidemic mosquito-borne disease. The readiness with which Europeans, not usually resident in such areas, take advantage of the protection offered in times of stress is—to say the least—highly significant.

(*c*) The importance and value of protective inoculation is continually kept before Europeans both official and of the trading community.

All Europeans coming to West Africa should take advantage of this protection, for it will be very many years yet before yellow fever ceases to be the factor it now is.

(*c*) *Filariasis.*

104. A few cases of filariasis are reported from most large stations, but the condition is stressed from none. No special measures have been necessary for its control save the anti-mosquito measures briefly summarised under sections (*a*) and (*b*).

(*d*) *Dengue.*

105. Sporadic cases of dengue are reported from time to time, but the disease rarely assumes epidemic proportions.

Of recent years medical officers are inclining to the view that a " dengue-like " febrile disease exists in the forest belt which is dependent for its propagation on biting flies of the *genus Culicoides*. It is considered that this assumption is, in all probability, correct, but—of course—no proof is yet forthcoming.

(*e*) *Trypanosomiasis.*

106. During 1936 some 182 deaths were registered as due to trypanosomiasis compared with a total of 110 deaths registered in 1935.

The death rate per 100,000 living persons was 55 compared with 35 for the previous twelve monthly period.

107. It must be stressed, however, that deaths due to trypanosomiasis usually occur in areas to which death registration does not yet apply.

108. Until a comprehensive survey of the whole question has been carried out control will be in the hands of the Research Branch, for this reason it is not intended to discuss the problem to any length in this section of the Annual Report. Full data are not yet available and prolonged discussion, until such are forthcoming , must be fruitless and possibly misleading.

109. Remedial operations have been undertaken on a considerable scale, and the clearings originally made have been maintained.

110. From a purely health standpoint it is thought that the various preventive measures, e.g. clearings for the eradication of the fly, clearings to diminish contact between man and fly, massed treatment and removal of population will all take their part in the final solution of the problem.

111. There will be, it is considered, no " royal road " to finality and that one, or other, of the generally accepted preventive methods will predominate in the various localities, and will vary from area to area.

112. Clearings with the eradication of the fly in view, probably, will rarely be applicable except in confined areas. Clearings made to diminish contact between man and fly certainly have their uses and are valuable.

113. The disease in the Gold Coast still is of a chronic, indolent nature and amelioration, if not cure, in the early stages can be expected. The reaction of Europeans to treatment, who may well be considered as less " tolerant " than the African, may serve to emphasise this point. Whether the virulence of the strain is increasing must well be considered, but it is thought that, up to the present time, there is no evidence of this.

114. Much must depend on the clinical indications of the degree of virulence of the strain. Trypanosomiasis is no new disease in any part of the Gold Coast, and it is believed that evidence exists of voluntary movements in the past on the part of the population to escape the menace.

115. Clearings in savannah country except those limited to the purposes of protection (the areas so cleared being utilised for the raising of low crops) are not unattended by the dangers of erosion and loss of soil, the drying up of water holes, courses, etc., and resulting diminution of food supplies.

116. When the problem presented in the forest areas of Ashanti and the Colony comes up for consideration, later, it will probably be found that clearings have a distinctly limited value, except in and surrounding frankly urban areas. Already, many districts denuded of forest and given over to secondary bush, or approaching savannah conditions, when water facilities are appropriate, have their fly problem. Such conditions are well seen over considerable areas in the Pra, Ancobra and Birim valleys, and even in the Densu valley a few miles outside Accra.

117. Fly is plentiful throughout the Gold Coast wherever conditions are suitable. More cases of trypanosomiasis are being seen yearly. This increase is considered to be both actual and due to an increased faith on the part of the people in the efficacy of modern treatment. There is little sign, yet, of any increase in the virulence of the infecting strain. Immigration and movement of population, it is considered, is increasing yearly. Towards the end of the year a survey was carried out at Kumasi at the disinfesting station on the Great North Road, and the blood of all immigrants was examined for trypanosomes. Some two per centum were found to be infected. This ratio, although apparently small, represents a large number when the total number of immigrants passing south is considered. This figure cannot be guessed at. At the disinfesting station, where the survey was carried out, some 38,106 immigrants were dealt with during the year, but this total only represents the stream approaching Kumasi by one of many routes.

118. As in the prevention of all disease, education of the people in avoiding, as far as is possible, contact with fly will play a not unimportant part.

(*ii*) EPIDEMIC DISEASES.

(*a*) *Plague.*

119. No case of plague was reported during the year. The threat, however, exists at both the major ports—Takoradi and Accra.

At Takoradi ships come alongside the quay, while at Accra, although ships lie well out in the roads, the proximity of extensive slum areas in proximity to the port makes for uneasiness.

120. During 1936 some 107,228 rats were caught at ports and inland centres, and of these a representative percentage were subjected to bacteriological examination.

No plague infected rat was found.

121. The trapping of rats, as carried out in the Gold Coast can have but little effect in reducing the rat population, but it serves to train a nucleus of expert catchers, and provide a sufficient number of rats for bacteriological examination.

122. A considerable amount of rat-proofing of warehouses, cocoa-sheds, etc., was carried out during the year in the larger centres, but very much more requires to be done as there is decided leeway to be made good extending over from the past years of economic depression.

(*b*) *Cholera.*

123. So far cholera has not made its appearance in the Gold Coast.

(*c*) *Smallpox.*

124. During the year one outbreak of smallpox has to be recorded.

The outbreak occurred in the Western Province of Ashanti.

The widespread nature of the points where the first few cases were discovered led to the belief that a sharp epidemic was to be expected.

125. Local action, however, was prompt and thorough and the outbreak was stamped out in a few weeks.

126. The total number of cases recorded was 59 with nine deaths.

127. Lanolinated lymph to the value of £2,054 supplied by the Lister Institute, was used throughout the year.

Details of the vaccinations performed are shown in the following Table :—

TABLE XVI.

	1935.	1936.
Total persons vaccinated	353,192	454,635
Number verified successful	120,019	114,874
Percentage successful	85	82·51

128. Most of the Health Branch staff are trained in vaccination duties and take their share of the work in times of epidemics.

The twelve regular vaccinators are stationed at strategic points, e.g. ports and important centres, at ferries and frontier stations where the influx of immigrants is considerable.

(*d*) *Enteric Fever.*

129. During the year the fevers of the enteric group were declared to be " infectious diseases " under the Infectious Diseases Ordinance.

This measure was necessary to permit of the proper control of cases and contacts.

130. Some 18 deaths were recorded during the year as compared with 21 for 1935. The death rate per 100,000 living was 5·5 compared with 6·6 for the preceding 12 monthly period.

131. This rate is not high, but it is considered that it does not correctly indicate the incidence of the disease in the general population which is believed to be considerable.

132. Most of the cases occurred in the Eastern Province chiefly in the towns of Nsawam and Accra.

133. Nsawam depends for its drinking water on a grossly polluted stream, and here a minor epidemic occurred.

It may be added that certain of the cases clinically resembled yellow fever and full bacteriological investigation had to be carried out before this disease could be excluded.

134. It is thought that the incidence of the diseases of this group will rise in Accra over the next few years. The public pan latrines in the central congested portion of the town are grossly insanitary and should be replaced by a water-carriage system.

135. The concrete street drains run deep with liquid filth much of which is excretal in origin, and insufficient water is available for flushing purposes.

The smell of these street drains constitutes almost a general nuisance.

136. A certain number of Europeans avail themselves of the protection afforded by inoculation. Most, however, are apathetic. All should be protected.

(*e*) *Dysentery.*

137. The diseases of the " dysentery, diarrhœa and enteritis " category occupied the third place in the list of killing diseases.

138. Some 710 deaths were registered yielding a rate per 100,000 persons living of 218 ; as compared with a total of 741 deaths and a rate of 233 for 1935.

The percentage of deaths to deaths from all causes was 8·9 compared with 9·5 for the previous 12 monthly period.

139. Amœbic dysentery can be considered as being approximately twice as prevalent as the bacillary variety, pointing to a fly-borne infection as being the commonest source of the trouble.

140. Diseases of this group are much commoner in the backward rural areas, where the Chiefs and people are, commonly, too indolent and apathetic to provide latrines and cannot be forced to do so.

141. During the year under review a very fatal outbreak of bacillary dysentery occurred at Begoro a large rural town in the Eastern Province. The infection accounted for 115 deaths in young children who were already suffering from a severe outbreak of measles. Such outbreaks not infrequently occur towards the end of the dry season, and—as in this instance—the brunt often falls on the very young members of a community.

142. The methods of prevention resolve themselves into the provision and due protection of, as pure a water supply as can be procured ; the proper disposal of refuse and the provision of an adequate number of sanitary latrines.

(*f*) *Cerebro-spinal Meningitis.*

143. During 1936 no deaths were recorded as due to this disease. As previously, improvement in housing conditions, freer ventilation and the extension of lay-outs are regarded as the chief means in the prevention of this disease.

(*g*) *Relapsing Fever.*

144. No deaths were recorded during the year as due to relapsing fever. Previously, outbreaks occurred yearly in the populous Zongo at Kumasi. The elaborate delousing organisation operating over the last few years in this centre has been successful in keeping this disease in the background.

145. During 1936, some 38,106 immigrants were disinfested in the disinfesting station situated on the Great North Road a short distance outside Kumasi. In 1935 the number of immigrants appropriately dealt with was 30,586.

(*h*) *Yaws.*

146. Some 5,822 cases of yaws were treated in the Infant Welfare Centres during 1936, constituting 14·34 per centum of all cases treated.

147. In 1929–30 the percentage of yaws stood at 24, and by 1933–34 had fallen to 12·5 per centum.

148. Yaws is rarely seen in the florid secondary form in the larger, comparatively well sanitated centres, but is still common in the more rural, backward areas.

The incidence of this disease corresponds closely to the standard of sanitation in any particular locality.

149. Prevention can be summed up briefly in the elevation of all conditions comprising environmental sanitation and the treatment of the condition in its infective stages.

(*i*) *Diphtheria.*

150. During 1936 some six deaths were registered as due to diphtheria.

Cases are fairly regularly reported from such centres as Accra and the necessity of keeping such cases in hospital until non-infective and the control of the contacts has well justified the declaration of diphtheria as an " infectious disease."

(iii)—OTHER DISEASES.

(*a*) *Leprosy.*

151. No staff has been available during 1936 to increase our knowledge with respect to the incidence of this disease. It has been generally accepted that some 1·5 to 2 per mille of the general population are lepers, and that the proportional incidence of the disease increases from south to north.

152. The leper settlements at Accra, Ho, Kumasi, Yendi and Sekondi continued to function throughout the year.

153. The principal settlement is that at Ho where some 414 lepers were accommodated during the year.

154. It was encouraging to be informed by Dr. Muir on his visit to the Gold Coast that so many of the lepers accommodated in the various settlements were in an acutely infective stage, and that for this reason alone their voluntary segregation was a very desirable consideration.

155. The rehousing of the lepers both at Sekondi and Accra is now overdue. In both these centres the lepers are accommodated in the respective Contagious Diseases Hospitals. In Sekondi the voluntarily segregated lepers number 17, while in Accra the number of lepers accommodated is now some 70.

The question in Accra is at present somewhat acute, and discussions are proceeding with respect to a site for a new settlement where facilities for farming, fowl rearing, etc., will be available.

156. Lepers discovered during routine inspections are persuaded to subject themselves to voluntary segregation. This they are, usually, not prepared to do until they are helpless, or fail to find anybody who is prepared to take them in. If removal to a settlement is refused, the householder is advised as to their segregation, in so far as this is possible, in the compound. It is sometimes surprising how well such advice is carried out.

(*b*) *Tuberculosis.*

157. During 1936 tuberculosis was responsible for some 853 deaths ; a total only surpassed by the combined diseases of the " pneumonia, broncho-pneumonia, bronchitis group. The total for 1935 was 867.

158. Of this total, 632 were male and 221 were female deaths.

As in past years, males in the 25–45 year age group were chiefly affected.

159. The deaths from tuberculosis represented 10·6 per centum of all deaths registered, compared with 11·1 per centum for 1935.

160. The rate per 100,000 persons living was 262. In 1935 this rate stood at 273.

161. It is considered that little need be added to emphasise the importance of tuberculosis as a " killing " disease in the Gold Coast.

162. The pulmonary form of the disease constituted over 90 per centum of the total, and for this reason remarks will be confined to this type.

163. The disparity between the figures for males and females can readily be explained. The male age group which provides some 42·2 per centum of all cases is the 25–45-year group. Most of the immigrant and labouring classes are contained in this category. On these men fall in the greatest degree the effects of under-nourishment, exposure, strain, overcrowding in insanitary hovels, ignorance of the rudimentary laws of health and the universal spitting habit. Many suffer from concurrent debilitating diseases, and their power of resistance to the infection is almost non-existent. A more fertile soil for the implantation of infection would be difficult to find.

164. Many sufferers, when the cause of their complaint is obvious, make an attempt to return to their homes. Some succeed in doing this, others die *en route.*

Whatever happens, the chances of their propagating the infection are legion. Year after year the process continues, and it is little to be wondered at that the consensus of opinion indicates a steady increase of the infection in the rural areas in which the majority, if not all, of the labouring classes have their homes.

165. The deep mining industry undoubtedly influences the position, but it is very hard, if not impossible, to gauge the extent of its influence. The mine labourer is not " compounded," and is quite free to go and come, to work, or not, as it pleases him. On the first sign of infection he usually leaves his work, and after a sojourn of varying length in some insanitary bush village sets out for home.

166. Silicosis, it is considered, can appropriately but briefly be referred to here. The condition is believed to exist but to what extent is not known.

Whatever may be the effect of diminished ventilation and the dust factor, it is held that the implantation of a tuberculous infection on originally non-resistant and now irritated and prepared " soil " will extend so rapidly, as a general rule, that little more than the implanted tuberculous infection will be patent.

Whatever results are obtained after investigation it is considered that emphasis will have to be laid on the infection factor and that *silico-tuberculosis* will be the more appropriate term.

It is hoped in the near future to commence at Tarkwa an investigation into the incidence of *silico-tuberculosis* in the deep mining area.

A medical officer, skilled in X-ray work and interpretation of results, and a medical officer of health, with tuberculosis experience, will be posted to this station and will carry out a preliminary investigation of the problem working in close co-operation with Chamber of Mines, the mine managers and mine medical officers.

167. The prevention of tuberculosis can briefly be summarised, as follows :—

(*a*) The improvement of all factors constituting environmental sanitation with particular reference to housing and overcrowding.

(*b*) The steady extension of layouts in both rural and urban areas.

(*c*) Education in its broadest application with special reference to the universal spitting habit.

168. When the whole field of prevention is reviewed it is considered that tuberculosis is the most direct threat to the future of the peoples of the Gold Coast. Diseases such as trypanosomiasis will rise and fall in incidence and virulence in certain localities as in the past, but tuberculosis will continue taking its toll anywhere in the Gold Coast necessitating elevation in every phase of sanitation and in the economic status of the people before its progress can be checked.

169. Tuberculosis is apt not to receive the publicity it undoubtedly warrants, and tends to be relegated to the background in the public opinion in the face of such threats as are presented by well-advertised diseases as yellow fever and the aforementioned trypanosomiasis.

(*c*) *Pneumonia.*

170. As in the past, diseases of the " pneumonia, broncho-pneumonia and bronchitis " group occupy the first place in the list of killing diseases. During 1936 some 1,205 deaths were registered as due to diseases of this important group compared with a total of 1,300 deaths registered in 1935.

These figures yield a percentage of 15·05 to the total number of registered deaths, and a ratio of 370 per 100,000 persons living.

171. The ratio per 1,000 deaths in 1936 was 151, in 1935 this figure stood at 166 and in 1934 some 158.

172. The causes and prevention of diseases of this group are as briefly touched on in the preceding section.

173. As usual, males in the 25–45-year group chiefly contributed to the total number of deaths. Underground workers and boat boys employed at the various ports are particularly prone to diseases of this group.

174. As previously, deaths occurring in the early stages of the fulminating type of pneumonia have, at times, been difficult to distinguish from cases of yellow fever even after post-mortem examination and microscopic inspection of the organs.

No disease can kill in a shorter period, and death often occurs under the most dramatic conditions often while the sufferer is at his usual work.

(iv) HELMINTHIC DISEASES.

(*a*) *Ancylostomiasis.*

175. In 1936 some 33 deaths were registered as due to ancylostomiasis compared with 20 registered in 1935.

176. This infestation is common to a minor degree. It does not figure largely in the list of fatal diseases and clinical manifestations are not often seen even in the mining areas and localities where the provision of pit-latrines is a matter of difficulty. As a factor in lowering resistance and in predisposing to other diseases ancylostomiasis does, however, play a not unimportant rôle.

It is possible, if the Gold Coast suffered from periodic visitation of famine, that this infestation would loom much more prominently as a killing disease.

177. Methods of prevention consist in the provision of an adequate number of as sanitary a type of latrine as possible and the careful disposal of night-soil. Large rural areas are, however, without any such accommodation and it is not possible to enforce provision.

178. In the deep mines every effort is made for the provision of a sufficient number of sanitary underground latrines ; the removal of all night-soil to the surface for disposal ; the draining away of all standing water ; the removal of collections of liquid mud from the levels and working areas, and the frequent disinfection of the floors and surroundings of latrines with disinfectants, or a 20 per centum solution of rock salt.

(*b*) *Ascariasis.*

179. This infestation is of the highest importance, especially when the welfare of the young is considered. It is difficult to exaggerate its harmful effects on the young child.

Few if any children escape ; the infestation is almost universal.

180. The importance of this condition is stressed from all welfare centres and from many stations.

181. Prevention resolves itself into the provision of an adequate number of a sanitary type of latrine, and cleanly methods of night-soil disposal.

Educational propaganda in the schools, in the homes of the people and at welfare centres and weighing clinics is also an important factor in control.

182. If the excreta-saturated, pig-haunted environs of many of the villages are considered it cannot be wondered at that the infestation is so common, or that the children, becoming infested as soon as they can crawl about (and malaria infected in addition), are not in a position to show a sound resistance when attacked by a superimposed, simple bronchitic, or intestinal infection.

(*c*) *Tæniasis.*

183. Tæniasis is commonly spread throughout the Gold Coast and is commonest where fuel facilities for the proper cooking of food are not available.

184. The methods of prevention can briefly be summarised as follows—the control of slaughtering, the proper care of slaughter-houses and slaughter slabs where possible, and the provision of an adequate number of latrines of a sanitary type and the cleanly disposal of night-soil. As stressed previously, the provision of an adequate number of satisfactory, sanitary latrines in rural areas is always difficult to obtain and often is impossible.

(*d*) *Dracontiasis.*

185. In the more important centres dracontiasis, save as the odd imported case, is very rare. The infestation is, however, common in backward, rural areas where the local water supply presents difficulties.

186. In localities where the condition is common, the obtaining of water, usually necessitates the scooping of water from shallow pools, water-holes, swamps and even puddles, and where in the dry season water of any quality or in any quantity is impossible to procure.

188. As a rule the people are quick to blame their water supply for their misfortunes, and in Ashanti, when expert advice and assistance are forthcoming, they will work hard on bettering conditions. In the Colony, the Chiefs and people—unless the work is done for them—are usually quite apathetic.

189. Preventive methods consist in the selection of and the protection of the best, local available source of supply, the collection of water from which does not necessitate wading.

Such protected supplies consist either of spring, or stream-fed, concrete collecting tanks from which the water is delivered through short lengths of iron-piping, or well-constructed wells.

(*e*) *Schistosomiasis.*

190. In 1936 some seven deaths were recorded as due to schistosomiasis compared with six returned for 1935.

This infestation has a fairly wide distribution although it is less common than the three preceding infestations.

191. The condition is given prominence in reports from the various stations in the Central and Eastern Provinces of the Colony and in certain localities in Ashanti and the Northern Territories.

192. It is not uncommon for the sufferer almost completely to ignore the symptoms which are not infrequently confused with those of gonorrhœa.

193. Methods of prevention include the careful disposal of excreta, the draining of pools and swamps harbouring the mollusc hosts—this is not infrequently difficult or impossible, owing to the extensive nature of these collections of water—and the treatment of those infested.

Animal Diseases.

194. The outbreak of canine rabies reported fully in the Annual Report for 1935 continued into 1936, and the whole of the Gold Coast remained declared an " infected area."

The sporadic cases reported, however, have been fewer, and it is clearly indicated that the incidence is declining. It is considered that sporadic cases will still continue to crop up over a considerable period yet.

During the period under review five human cases with three deaths were recorded. Ample stocks of human vaccine were on hand to deal with all cases of persons bitten.

195. Throughout the year a steady and ample supply of canine vaccine has been available through the kindness of the Director of Veterinary Services.

This vaccine has been made at the Headquarters of the Animal Health Department at Pong-Tamale.

196. Certain places, including Accra, Kumasi and Nsawam, have been declared areas of compulsory canine immunisation.

This measure has done much to eradicate the disease in those areas where the incidence of canine cases was highest.

197. Thousands of dogs continue to be killed, but their place in the larger centres is nearly as rapidly filled by dogs wandering in from the surrounding rural areas.

Constant vigilance and energetic catching and destruction are always necessary.

198. Sporadic cases of anthrax, contagious pleuro-pneumonia and epizootic lymphangitis have been reported.

Two fatal, human cases of anthrax were reported from Koforidua and Kumasi during the year.

199. An interesting record of the fall in the incidence of cysticercus bovis is recorded from Tamale, showing the result of the provision of adequate latrine accommodation in the neighbouring villages and the kraaling of the cattle outside the villages. In 1934 out of 503 animals slaughtered, 7·1 per centum were found to be infested. In 1935 out of 564 cattle killed, the percentage had fallen to 3·9; while in 1936 when 461 cattle were slaughtered the percentage had fallen to 0·65.

200. One case of generalised tuberculosis in an ox imported from Nigeria was reported from Sekondi.

This case was confirmed bacteriologically.

201. The importation into the Gold Coast by sea of cattle from the Cameroons, for slaughtering purposes, has commenced. These cattle are of very good quality and infinitely better than those driven overland which usually arrive in an emaciated, overdriven and often in a diseased condition. It is hoped that the French company responsible for the enterprise, succeeds in establishing a steady market in the Gold Coast, for this addition to the food supply in a country where protein is so lacking in the dietary will be of great value.

Seasonal Prevalence of Diseases.

202. The seasonal prevalence of diseases is not a marked feature in the Gold Coast.

(II) GENERAL MEASURES OF SANITATION.

(*a*) *Sewage Disposal.*

203. During 1936 little alterations in pre-existing methods can be reported.

204. The number of septic latrines in use is steadily increasing both in the larger centres and in the smaller stations. When not overworked and fairly treated by the users, this type of latrine is proving satisfactory and economical. Gradually a sound type is being evolved for general use.

205. Owners of private residences and trading firms are taking an interest in and are steadily increasing the number of installations of water-carriage and septic tank disposal systems.

This movement is being encouraged, but in many stations in the Gold Coast the disposal of the effluent from the septic tank presents difficulties.

In certain localities the effluent can be discharged from the tank into subsoil water directly, but in many it has proved necessary to run the effluent through an aerating bed before final disposal.

It is hoped in the near future to extend this system of night-soil disposal to Government bungalows for the prevailing removal pan is primitive in the extreme, and nuisances in the handling of the excreta inevitably result from time to time.

206. The sea disposal of night-soil in Accra constitutes a nuisance of the first order. The consensus of opinion, however, deprecates the expenditure of funds on remedying this as a water-carriage, sewer-borne system for the central congested area of Accra will become inevitable in the near future, and will be considered as soon as an augmented water supply is available.

The outer or "dormitory" area of Accra, which is steadily growing, it is considered can best be served by a system of septic latrines and water-borne, septic tank installations for the better class residences.

207. In the Northern Territories a system for the composting of organic refuse and excreta is gradually being evolved. The excretal element required is withdrawn from specially designed, simple septic latrines. The process is not yet out of the experimental stage, but it promises well for the future.

The result of the utilisation of an ample supply of compost on agricultural land approaching exhaustion may well be far-reaching.

208. It is becoming increasingly difficulty to obtain the provision of an adequate number of sanitary pit-latrines in the smaller towns—even when these are subject to the provisions of the Towns Ordinance. The clauses of the Towns Ordinance, relative to the provision of latrines have now been modified in their application by the Labour Ordinance, and little progress is possible.

The danger, and wastage of infant life, resulting from the excreta-soaked surroundings of villages have been stressed previously.

(*b*) *Refuse Disposal.*

209. Little divergence from previous methods can be reported for 1936, with the exception of the experimental work carried out in the Northern Territories in in the composting of refuse and excreta which has been referred to in the previous section.

The process being evolved is very promising, but its extension for general adaptation must be gradual and well controlled, for with any indication of carelessness the process can become a first class nuisance and fraught with extensive, disease-carrying possibilities.

(*c*) *Drainage.*

210. In most centres in the Gold Coast funds were chiefly expended in the maintenance and repair of existing, concrete drainage systems which were tending to fall into disrepair after several years of economic depression and lack of adequate funds for maintenance. In several towns, principally in Kumasi where 1,275 lineal yards of new drains and 242 lineal yards of culverts were constructed, a varying amount of extension of existing drainage systems were carried out.

211. In most centres extensions of existing earth drainage systems were undertaken, but in almost every centre the maintenance and upkeep of the existing systems taxed the available labour force to the utmost.

212. Of the important centres Accra is incomparably the worst drained.

The town and its Christiansborg suburb are rapidly extending to the north into low-lying areas where the only drainage available is by means of primitive earth cuts, which are often completely lost over extensive lengths after every heavy downfall of rain.

The provision of a graded, concrete drain from the head of Korle Lagoon to the Ring Road is of pressing urgency.

(*d*) *Water Supplies.*

213. The pipe-borne water supplies at Accra, Cape Coast, Sekondi, Takoradi, Kumasi, Tamale and Winneba functioned very satisfactorily throughout the year.

214. The year 1936 may be designated as marking an epoch in the provision of pipe-borne water supplies.

Extensions of the Cape Coast supply to Saltpond were commenced on the east and to Elmina on the west of Cape Coast. The pipe-borne water supply for Koforidua was, also, commenced and made steady progress. The benefit to the public health in these centres, and in villages on the pipe lines on completion is hard to exaggerate.

215. It is understood that a comprehensive survey of the possibilities for water supplies to the more important centres in the Northern Territories has been completed, and that a proposal to constitute a Water Board for the Northern Territories has been put forward, but no detailed information has yet been

forthcoming. Further comment is, therefore, not possible. It is believed that the work of installing these supplies, chiefly in the form of wells, is to be undertaken by the Department of Geological Survey.

216. Tarkwa and Nsawam are urgently in need of pure pipe-borne water supplies as are several towns and larger villages on the Akwapim Ridge. Provision has been made in Estimates for 1937–38 for the investigaton of the problem in Nsawam and Tarkwa.

217. Chemical and bacteriological examinations of water samples were carried out, as required, during the year.

218. Of 101 samples taken from the Accra supply, during and after treatment, 98 or 97·02 per centum, revealed the absence of B.coli in 100 cubic centimetres.

Of 55 samples taken from points of distribution 55 or 100 per centum, indicated the absence of B.coli in 100 cubic centimetres. These results must be considered as constituting a very high standard of purity.

219. Of 23 samples taken from points of distribution at Sekondi and Takoradi 14 or 60·87 per centum, proved the absence of B.coli in 100 cubic centimetres.

220. In the Colony the Chiefs and people exhibit a peculiar apathy as to the quality of their drinking water.

In Ashanti this is not so, and considerable interest and not a little aid is usually forthcoming if expert advice and help can be made available.

(*e*) *Clearance of Bush and Undergrowth.*

221. Little can be added to former reports dealing with this important measure.

Open spaces and perimeters of towns and residential areas cannot be kept in the condition they deserve.

Clearing is, usually, confined to strips of varying width and the rest of the areas given over to farming which is controlled as far as possible.

This method is not satisfactory, but with the labour force available it is all that can be done.

222. The danger attached to uncleared surroundings of small towns and larger villages on important trade routes has often been stressed. Such overgrowth always conceals numberless thrown-out tins, bottles, old calabashes, snail-shells, etc., all of which are potentially water-retaining and ideal " nurseries " for *Aedes aegypti*.

It matters little if in such places the house larval index is nil, when in close proximity are numbers of receptacles concealed in overgrowth and breeding mosquitoes.

223. In the Northern Territories the areas cleared originally, with tsetse control in view, have been carefully maintained pending a detailed survey of the trypanosomiasis question by experts, which is expected to commence in the near future.

(*f*) *Domiciliary Visiting and Inspections.*

224. Every officer of the Health Branch takes his, or her, part in this most important phase of prevention.

During 1935 some 2,262,565 inspections were carried out ; in the year under review the total reached 2,407,937.

225. In addition to this total, regular visiting was carried out by health visitors, nursing sisters, Red Cross sisters, midwives, voluntary workers and sisters attached to mission welfare centres.

226. The results of the inspections carried out throughout the year in six of the larger centres is shown below :—

TABLE XVII.

Town.	Convictions for mosquito larvae.	Fines for larvae.			Convictions for insanitary conditions.	Fines for insanitary conditions.		
		£	*s.*	*d.*		£	*s.*	*d.*
Accra	619	337	13	0	2,160	321	13	0
Cape Coast	315	106	16	0	968	177	6	6
Koforidua	278	54	16	0	825	107	6	6
Kumasi	416	157	9	0	2,888	749	14	0
Sekondi	32	8	5	0	431	69	14	6
Tamale	353	32	10	3	936	65	11	6
Total	2,013	697	9	3	8,208	1,491	6	0

227. For the whole of the Gold Coast a total of 34,921 convictions were obtained for insanitary conditions and mosquito larvae.

228. A total sum of £4,130 15s. 3d. resulted from the fines imposed in 26,554 convictions for insanitary nuisances and £2,041 7s. 9d. for 8,367 convictions for mosquito larvae.

(g) *Offensive Trades.*

229. Offensive trades do not figure very largely in the Gold Coast.

In this category may be included fish-curing, dyeing and hide-curing.

230. Of these trades the only extensive one is fish-curing, and this is practically confined to the seaboard.

Fish incompletely cured on the coast may, occasionally, be found undergoing a second process far inland.

(III) SCHOOL HYGIENE.

231. Unfortunately nothing in the nature of a school medical service is in existence. Local medical officers of health keep in as close touch with the schools as possible.

Several attempts have been made to inaugurate routine inspections, but changes in staff and staff shortage, have repeatedly caused breakdowns in the scheme.

232. There is no doubt that sanitary conditions in the schools, generally, have improved very considerably during the last twelve years or so, but instances of overcrowding, defective ventilation and lighting, lack of adequate latrine accommodation, etc., are not infrequently come across.

233. As in the past the thanks of the Health Branch is due to the inspecting officers of the Education Department for the stress laid on the importance of general cleanliness and sanitation.

(IV) LABOUR CONDITIONS.

234. The flood of immigration continued unabated during the year.

Figures to prove this are difficult to obtain. If the figures provided as the disinfesting station on the great North Road at Kumasi are studied it is seen that the total of 30,586 persons dealt with in 1935 rose to 38,106 in 1936. This route, after all, is but one of many and it can be taken that the influx by all routes was higher than in the previous year.

235. The demand for labour undoubtedly has risen, but it is doubtful if this demand has kept pace with the potential supply.

236. Most of the immigrants are from French Territory and are apparently attracted yearly into the Gold Coast in ever increasing numbers by the reports of returning prosperity and the possibilities for employment.

237. The newly arrived immigrant is, usually, in a filthy, undernourished and often diseased condition. The importance of the trypanosomiasis infected, potential labourer has been referred to previously in this report.

238. On obtaining steady employment the improvement in the condition of the immigrant labourer is rapid, but many arrive in a condition unfit for work and have to be accommodated and fed in the " Refuge " in Kumasi or Tamale, before they are fit to continue their journey.

239. The immigrant labourers on taking up employment fall roughly into one of two categories.

(*a*) *Unorganised labour* which includes the numbers of men carrying out casual portering work in connection with lorry parks, markets, cocoa-sheds and in the streets of the town ; the labourer taking up work in the cocoa farms and those prepared to do any odd jobs generally. This type of labourer gives rise to a good deal of anxiety. He takes up no fixed quarters and lives anywhere. He saves every penny possible, and his physical condition improves but little during his sojourn.

(*b*) *Organised labour* includes those labourers taking up employment on the mines (where he earns better money but runs increased risks) ; those who obtain employment on public works and with private firms and contractors, and labour employed as boat boys at certain of the ports. Public works and private contracts, etc., have undoubtedly absorbed a considerably increased amount of labour and the process is extending.

Labour at the ports, e.g. boat boys, formerly were largely immigrants from the Kru coast ; recently, however, such immigrants appear to be declining in numbers and men from various places on the Gold Coast seaboard appear to be taking their places.

240. Briefly, possibilities for employment have improved, but the supply of labour is still greater than the demand. Rents are too high, and pay is on the low side. Prices of local foodstuffs are on the increase.

241. These factors and the ever-present considerations resulting from the " family " and " tribal " systems still make for a good deal of hardship which is not confined to the labouring classes only, but extends to the clerical classes who in the early years of their service, have considerable difficulty in keeping and clothing themselves and their dependents and fulfilling their due " family " obligations.

242. During 1936 some 29 deaths were reported as due to starvation as compared with 13 in 1935.

(V) HOUSING AND TOWN PLANNING.

243. A decided impetus has to be recorded with regard to the building of good class houses in most of the larger centres.

244. In Accra this is very marked and houses of excellent quality are springing up rapidly in the Adabraka and Christiansborg suburbs of the town. So extensive is the process that an excellent, finished house is often seen without a made up road of approach.

245. Kumasi, also, reports good progress, 71 permits having been submitted and passed during the year.

The demolition of the dilapidated houses in the Zongo Road area is proceeding, and it is proposed to deal with the unsatisfactory areas in Dominasi next year.

246. Progress is also reported from such centres as Takoradi, Koforidua and Cape Coast.

247. It is satisfactory to be able to record, after a series of years, considerable activity in the erection of bungalows by trading firms in the Accra residential area. In closing this brief paragraph mention must be made of the slum areas in some of the older larger centres. In Accra some 10 per centum of the population lives in extensive slum areas, the clearing away of which represents a work of national importance to the Gold Coast.

(VI) SANITATION IN THE MINING AREAS.

248. This important subject has now grown to such an extent that it has been found necessary to reduce its consideration in the body of the report to a few brief comments, and to include the report of the senior health officer, Western Province, as an Appendix VI, *vide* page 96.

249. Progress in the mining areas, under the control of the respective managers has been considerable.

250. In the surrounding mining health areas, however, not inconsiderable difficulties have arisen.

These can be enumerated briefly as follows—(*a*) *Legal considerations delaying the declaration of mining health areas.* These are inevitable in a country in the state of development of the Gold Coast.

(*b*) *The proper sanitary supervision of the growing ancillary towns.*—In these towns it is considered for various reasons, the chief of which is the mixed nature of the inhabitants, that the Native Administration will be unable to carry out the work properly and that the control of these towns can, only, effectively be carried out by strong Township Boards on which the local mining company is represented and on which the required Government political and technical officers have seats.

(*c*) *The question of the standard of buildings permitted to be erected in mining health areas and ancillary villages.*—In the Regulations B26 of 1935, the same standard was laid down for the mining areas, the mining health areas and for the ancillary villages. This standard corresponds to the Building Regulations of 1928 as laid down, generally, for towns under the Towns Ordinance. Locally, complaints were raised towards the end of 1936 that the standard aimed at was too high for mining health areas and ancillary villages. Suggestions were called for from the local experts for the embodiment of their views as to how the regulations could be relaxed with safety, and that an experimental house should be erected in accordance with these amended regulations.

This will be inspected in due course, and the question will be explored thoroughly.

251. Whatever decision is arrived at, finally the Chamber of Mines will require to be consulted, and it is doubtful what attitude will be taken by that body.

The Chamber of Mines accepted the comparatively high standard of building deemed necessary for the housing of the mine labourers. At the same time, they were assured that a like standard would be demanded from persons desiring to build in the ancillary towns and mining health areas on the outskirts of their properties.

252. If it is decided finally to lower the building standard in the mining health areas and ancillary villages, it would appear likely that the mining companies will insist on a similar lowering of the standard insisted on for the housing of their labourers.

253. If the standard at present demanded from prospective builders in mining health areas and ancillary villages, is retained, it is patent that all those who wish to erect dwellings will not be able to do so, and some will have to move further away from the mining health areas and ancillary towns into rural areas where at present no control over their building activities is possible.

254. Progress can be reported in the surface mines of the diamondfields, particularly at Akwatia, the property of the Consolidated African Selection Trust, where the company has built a new hospital of very satisfactory design and a new village to replace an old insanitary village.

This company is, also, installing a filtered and chlorinated pipe-borne water supply to its various villages.

These improvements elevate the sanitary standard of Akwatia to a very high level, and a visit to this mining centre can be most instructive and inspiring.

(VII) RURAL SANITATION.

255. Little progress can be reported in rural sanitation during the year save in the Northern Territories, where a real advance is apparent.

Here the Native Administration has made a good start on sound lines, and there is a very good prospect of a satisfactory sanitary standard being reached in the course of a few years.

256. In Ashanti, where the decline in sanitary standards is considered chiefly to have been due to the recent period of economic distress, matters are somewhat brighter and it is hoped to be able to report progress once more in later reports.

257. In the Colony, from a sanitary viewpoint, matters are much as they were during the previous year.

The Health Branch was permitted to see and advise on the draft estimates for the Native Administration relevant to the towns of Akwatia and Asamankese.

This marks a forward advance in the sanitation of two previously backward towns.

258. General advance in the sanitation of the more important rural areas in the Colony is, however, difficult to envisage for so many of the inhabitants are " strangers " owing no allegiance to the local Chiefs and co-operation is difficult to obtain save through the medium of Township Boards controlling the townships and adjacent urban districts.

259. Whatever means of control is decided for the future, it is stressed as previously that the sanitation of the larger centres, only, cannot hope to be successful. Such centres will be invaded, time and time again, from the outside insanitary squalor resulting in the imposition of quarantine restrictions and the resulting anxiety, emergency heavy expenditure of funds and curtailment of trade.

260. It is sometimes argued that rural sanitation necessitates heavy expenditure on the part of the people ; this is very far from being the case. In many areas in the Colony and Ashanti the materials are to hand, and all that is required is organisation, a little sustained energy, public spirit, wise control and driving force. These combined factors are difficult to obtain.

(VIII) FOOD IN RELATION TO HEALTH AND DISEASE.

261. The dietary of the general bulk of the population is considered to lack protein and animal fat and to be deficient in fresh fruit and vegetables. The dietary of a people generally deprived of all dairy produce must leave gaps which are difficult to fill, particularly with respect to the diet of the infant at weaning and thereafter.

262. Generally, the people are not short of food. The number registered as having died of starvation in 1936 numbered 29 as compared to 13, in 1935.

263. Deficiency diseases are not common.

264. The child at weaning time, however, usually is provided with a dangerously defective and deficient diet. The African mothers are defeated in procuring a suitable breast milk substitute ; generally they cannot procure for any lengthy period one of the various forms of preserved milk for their children owing to lack of means.

Such children, often worm-infested and malaria infected, hold on to life precariously, and not infrequently succumb to some simple, superimposed, bronchitic or intestinal infection.

1.—MARKETS.

265. Little advance in market construction can be reported. Minor improvements were carried out in many markets notably in Kumasi where the butchers selling-shed was very considerably extended, obviating the danger of congestion for many years to come.

266. Provision has been made in draft Estimates for 1937–38 for the completion of Swedru market ; the complete reconstruction of Nsawam market, improvements in Oda market, and for the commencement of the work connected with the lay-out and reconstruction of the Koforidua market.

The revenue obtained from the Kumasi market, one of the largest and most popular in the Gold Coast, was some £4,161 compared with £4,120 in 1935.

267. It is always stressed that money spent on market construction is money well invested, and which reacts notably on the public health.

There is often a tendency, however, to let too large a number of selling places to petty traders and cloth sellers to the exclusion of the vendors of local foodstuffs for which markets are primarily intended.

2.—SLAUGHTER-HOUSES.

268. A new public slaughter-house was opened at Ada early in 1936.

3.—CATTLE SHEDS.

269. Save the cattle sheds at the Department of Animal Health headquarters at Pong-Tamale no true cattle sheds exist in the Gold Coast.

4.—DAIRIES.

270. No true dairies are in existence ; and relatively little cow's milk is drunk. There is evidence that " fresh " cows milk is appearing in gradually increasing quantity in the Accra markets.

The supply is still very small, but in the future may become something of a public health problem.

5.—ÆRATED WATER FACTORIES.

271. In all large centres aerated water factories are subjected to periodic inspection, and their products subjected to bacteriological examination.

6.—RESTAURANTS AND EATING SHOPS.

272. In every large centre all restaurants and eating shops are subjected to regular inspection. The medical officer of health reports from Kumasi, where such eating shops are very carefully licensed, that green salads are increasingly frequently appearing on the bills of fare.

7.—BAKERIES.

273. In all the larger centres bakeries abound. In Accra they number in the region of one hundred.

They are regularly inspected and in Accra, Kumasi and Sekondi require to be licensed.

8.—FOOD INSPECTION.

274. In all centres, and wherever health staff is stationed, food products are regularly inspected.

As a rule seizure is not necessary, particularly with respect to imported articles, the holders voluntarily surrendering such and requesting a certificate of unsoundness.

275. Whenever possible, all animals are inspected prior to and after slaughter. When a Soyer stove is available cysticercus infected meat, if not too extensively infested, is permitted to be sold after sterilisation.

(*b*) Measures Taken to Spread the Knowledge of Hygiene and Sanitation.

(I) TRAINING OF HEALTH PERSONNEL.

276. The school for sanitary inspectors in training functioned throughout the year.

277. This school is now composed of inspectors in training of two distinct types—(*a*) the older inspector with the VIIth standard education certificate only, and (*b*) the inspector of a higher educational standard, i.e. possessing the 2nd class teachers' certificate after four years training. It has been found somewhat difficult to correlate the teaching to suit the two grades. Among the newcomers there are several who should, in the near future, have little difficulty in passing the Royal Sanitary Institute examination, and in this way making themselves eligible for appointment to senior posts.

It is considered that the post of training officer should now be elevated to carry a salary on the European scale.

278. The training of village overseers, as previously, has been undertaken in Kumasi.

279. Health visitors are trained by the medical officers in charge of welfare centres and the specially trained European nursing sisters attached to these centres. Part of their training is, also, undertaken by medical officers of health when house-to-house inspection, vaccination and birth registration are dealt with.

A determined effort is being made to get together a cadre of well-trained health visitors trained in general nursing, child nursing and midwifery. To be a success these health visitors should be able to proceed to a salary scale equal to that of the highest salaried female official in Government Service. It is essential to attract the highest type of well-educated African girl into this branch of prevention.

280. Midwives and subsidised midwives continue to be trained for the Health Branch at the Maternity Hospital, Accra.

281. Yearly more and more stress is being laid on the education of the public and on propaganda to further the aims of prevention. Results are slow, but sure, for the African is very educable.

Prosecutions and fines must however, always be available (as in far more civilised countries) to meet hostility, lethargy and open obstruction.

(II) GENERAL HEALTH EDUCATION.

282. As in past years close co-operation exists with the Education Department in the furthering of health knowledge. Hygiene is a subject taught in all schools and is admirably stressed on visits of inspection by inspecting officers of the Education Department.

The pages of the widely circulated *Teachers Journal* are generously thrown open for articles on health subjects. Many such have appeared.

283. The Junior Red Cross Links, of which there are now some 41 in existence, constitute a most valuable medium for the propagation of health knowledge and of which the fullest advantage is taken.

284. The Health Branch has co-operated actively with the authorities at Achimota College in giving lectures during courses in general hygiene.

285. The Gold Coast League for Maternal and Child Welfare, Gold Coast Branch, British Red Cross Society continues to carry out its quiet self-sacrificing work both in the homes of the people and at the numerous weighing centres. A monthly lecture on some health topic is arranged for the League. These meetings as a rule are very well attended.

286. Much sound educational and propaganda work is undertaken at the various Red Cross and Government welfare centres on such subjects as the prevention of malaria, worms, skin disorders, diseases of the eyes, etc., etc., infant feeding and weaning. Medical officers of health and their staff contribute to the dissemination of such knowledge in the homes of the people on, perhaps, broader and less detailed lines.

287. The Red Cross Public Health Museum grew steadily throughout the year, and the Society very generously voted the sum of £25 for the purchase of illustrations, etc., depicting the methods of spread of the more important local diseases. In the future this museum should fill an important educational rôle.

288. It is considered that health propaganda is only in its infancy in the Gold Coast as yet, and every effort will be made to extend its scope.

289. On the formation of Township Boards, it is considered that the co-option of educated and public spirited Africans to serve on such will have far-reaching effects in the furthering of health measures ; their experience and knowledge being brought to the assistance of their less well-equipped fellow countrymen to the mutual benefit of both.

(IV) PORT HEALTH WORK.

290. No Gold Coast port was declared in quarantine during the period under review.

291. During the year 5,021 immigrants and deck passengers were landed at Accra and appropriately dealt with. In 1935 the total so landed was 3,563.

292. The rat vulnerability of the buildings constituting the port was again a source of anxiety, particularly as the extensive slum areas of Accra closely approximate to the cliff margin below which the port is situated.

293. During 1936 a total of 612 ships comprising a gross tonnage of 136,937 tons touched at the port of Accra, compared with a total of 620 ships 1935.

294. At Takoradi during the year ships to the number of 649 entered the port, comprising a gross tonnage of 3,177,158 tons compared with 2,966,797 tons in 1935.

Of these 649 ships some 211 were defective. The defects noted in these ships were chiefly removable filth and defective cooking accommodation.

295. Fifteen cases of malaria and two of enteric were removed from ships during the year for hospital treatmeut.

296. In 1936 the inward passenger traffic included 2,658 deck passengers and 6,347 trans-immigrants, i.e. a total of 9,005 compared with 9,209 in 1935. On landing these passengers were appropriately dealt with.

297. During the year some 6,251 tons of water were supplied to ships from the water barge, and 16,086 tons from the water main on the wharf.

298. An institute for European crews of visiting ships was opened during the year and proved a great success. It is hoped to extend the accommodation in 1937.

299. Of the rats caught and examined bacteriologically at Gold Coast ports in 1936 none were found infected with plague.

300. The principal imports into Takoradi during the year were machinery (chiefly mining), cotton goods, building material, tinned and salted foodstuffs, salt, coal, petrol, kerosene oil and motor vehicles.

The principal exports were cocoa, manganese, gold, palm oil, mahogany and other timber and fruit.

301. It is increasingly important, in these days when consular visas and bills of health are considered superfluous, to render ports less suitable for the reception of infection from without. In the older ports, in particular Accra, the problem is a difficult one and appropriate rat-proofing a work of magnitude. Plague is a distinct menace and once implanted is extremely difficult to eradicate.

(*c*) Recommendations for Future Work.

1. Slum clearing and rehousing in Accra.
2. Water supply for Tarkwa and Nsawam.
3. Improvement of the Ho water supply and its extension to the Leper Settlement.
4. The provision of a Maternity Hospital at Kumasi.
5. Public health legislation—townships and rural.
6. Provision of a contagious diseases hospital and quarantine station at Takoradi.
7. Renovation of the Contagious Diseases Hospital and provision of a quarantine station at Accra.
8. The partial conversion of the pan-system of night-soil disposal in Accra and Kumasi into water-carriage systems.

9. The rehousing of the lepers in Accra and Sekondi.
10. An increase in the Health Branch staff of one Assistant Director of Health Service and one Sanitary Superintendent.
11. That the post of training officer should now carry a salary on the European scale.

(V) MATERNITY AND CHILD WELFARE.

302. Welfare work, both infant and maternal, progressed on satisfactory lines throughout the year. The mass of disease is so great that treatment still looms largely in the campaign, but true prevention is gradually asserting itself and is taking its proper place.

303. Welfare activities fall into three distinct categories. Government in 1936 continued in control of the Princess Marie Louise welfare centre in Accra and of the Kumasi welfare centre.

304. The Gold Coast Branch, British Red Cross Society, was responsible for the control of the welfare centres at Cape Coast, Sekondi and at Koforidua.

305. The Roman Catholic Mission continued the welfare activities at Djodzi, Eikwe, and Kpandu.

306. The result of the year's work at Accra and Kumasi is shown below :—

TABLE XVIII.

Government.	Attendances.			
	Children.		Expectant mother.	
	1935.	1936.	1935.	1936.
Accra	16,709	18,864	163	600
*Kumasi	17,559	13,466	11,093	10,781
Total	34,268	32,330	11,156	11,381

307. Some 569 in-patients were treated at the Princess Marie Louise welfare centre, Accra, during the year, and at the Kumasi welfare centre the number of in-patients treated was 699, compared with totals of 459 and 749 for Accra and Kumasi respectively for the previous year.

308. The following table shows the results achieved at the Red Cross welfare centres :—

TABLE XIX.

Red Cross.	Attendances.			
	Childen.		Expectant mother.	
	1935.	1936.	1935.	1936.
Cape Coast	10,593	10,364	3,893	4,677
Sekondi and Shama ...	9,039	8,236	3,463	4,779
Koforidua	22,757	29,365	5,919	7,563
Total	32,389	47,965	13,275	17,019

309. The Cape Coast Central Province Division, Gold Coast Branch, British Red Cross Society, employs a whole-time medical officer and a European sister at Cape Coast.

At Koforidua a whole-time medical officer is also employed by the Eastern Province Division of the Society.

The Western Province Division at Sekondi employs a European sister who is responsible for the running of the welfare centre.

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*In Kumasi, where there is no maternity hospital, a certain number of women are delivered at the welfare centre. During the year the number of these cases was 84.

310. Excellent work was carried out during the year at all the Red Cross welfare centres as indicated by the totals shown in Table XIX above.

311. The various divisions of the Society have purchased cars which they run and maintain for the furtherance of the work at the centres and for the preventive visiting work carried out in the homes of the people.

312. The work accomplished at the various mission welfare centres is summarised, below.

TABLE XX.

Mission.	Attendances.			
	Children.		Expectant mother.	
	1935.	1936.	1935.	1936.
Djodzi (Roman Catholic)	1,903	2,659	90	55
Eikwe	15,187	16,212	4,153	—
Kpandu	14,930	8,734	—	—
Amedzope (Bremen Mission)	2,363	—	—	—
Total	34,382	27,605	4,243	55

313. The work done at the mission welfare centres is of great value, but in the backward areas in which they operate the mass of disease makes true welfare work very difficult, as little time remains for prevention when the sick have been seen and dealt with.

314. It must not be thought that welfare work is confined to the centres mentioned above. All station hospitals are centres for education and propaganda. Subsidised midwives in their areas carry on the work, and one case is known where a European lady did excellent work completely on her own in the bush.

315. A very praiseworthy effort is that at Savelugu in the Northern Territories where the amount of work has necessitated the erection of a new building which will be opened in January, 1937.

This centre is entirely carried on by voluntary European lady workers. It was started in 1935 by Mrs. Griffith, and has since been carried on by Mrs. Jones, the wife of the Chief Commissioner of the Northern Territories.

316. One of the brightest features of 1936 has been the growth of the district weighing clinics in the large centres. In Accra there was no less than 42,051 attendances at these clinics, and in Kumasi 49,357 such attendances.

In face of these figures, it is useless saying that mothers will not bring their babies merely for following-up and advice. They will do so ; and such clinics, it is considered, are one of the main measures for the protection of infant life in the Gold Coast.

317. Nine nurse-midwives were employed by the Health Branch and 14 subsidised midwives. A subsidised midwife is a private midwife who receives from Government a monthly grant of £3 to enable her to establish herself in private practice. They are expected to practise where required and many of them are commencing to do well in practice. The results of the work done by the midwives and subsidised midwives are tabulated as under :—

TABLE XXI.

Station.	No. of midwives and subsidised midwives.		No. of deliveries.	
	1935.	1936.	1935.	1936.
Accra	9	9	585	889
Bekwai	1	1	29	41
Cape Coast	2	2	219	208
Koforidua	1	1	64	64
Kumasi	2	2	307	304
Nsawam	1	1	30	103
Oda	1	1	11	32
Odumasi	1	1	25	85
Sekondi	1	2	82	64
Anyinam	—	1	—	27
Saltpond	—	1	—	57
Aburi	—	1	—	15
Hohoe	—	1	—	27
Winneba	—	1	—	14
Total	19	25	1,352	1,930

318. There is little doubt that the services of scientifically trained midwives are being sought for, more and more, as the public are educated gradually to appreciate their value.

The native midwife in such a centre as Accra is rapidly disappearing from practice.

319. A successful effort was made during the year to obtain the inclusion of sums in Native Administration draft estimates for two important towns, to enable subsidies at Government rates to be paid to midwives to induce them to settle down in practice where their services in furthering infant and maternal welfare would be of great value.

J. M. MACKAY,
Deputy Director of Health Service.

VI. HOSPITALS, DISPENSARIES AND VENEREAL CLINIC, ETC.

320. A list of hospitals, welfare centres and similar institutions is given in Appendix I and Return D contains a summary of all patients dealt with at these places. The table below gives a comparison of the totals for the past three years.

TABLE XXII.

Patients Treated.

Year.	Remaining in hospital.	Total cases treated.	Percentage increase on previous year.	Deaths.	Remaining in hospital.	Number of deaths per 1,000 of in-patients treated.
1934	1,755	256,213	1·9	1,674	1,986	72·9
1935	1,986	273,476	6·7	1,841	2,165	72·5
1936	2,165	311,211	13·8	2,082	2,049	76·8

321. The steady increase in the work being done in the three chief centres of population appears in the following table :—

TABLE XXIII.

Africans and Europeans (In-patients).

Station.	1934. In-Patients treated.			1935. In-Patients treated.			1936. In-Patients treated.		
	Africans.	Europeans.	Persons.	Africans.	Europeans.	Persons.	Africans.	Europeans.	Persons.
Accra	3,085	269	3,354	3,140	326	3,466	3,327	315	3,642
Sekondi and Takoradi	1,326	228	1,554	1,122	339	1,461	1,328	354	1,682
Kumasi	2,465	164	2,629	2,758	216	2,974	2,989	228	3,217
Totals	6,876	661	7,537	7,020	881	7,901	7,644	897	8,541

322. The average cost per patient per day (including diets, provisions, fuel and light, medical comforts and kitchen staff) is shown below :—

TABLE XXIV.

Cost per Patient.

	1934.	1935.	1936.
	s. d.	*s. d.*	*s. d.*
European Hospitals : (Accra, Axim, Cape Coast, Winneba, Kumasi, Takoradi and Tamale)	3 6	3 0	3 7
African Hospitals : (Gold Coast Hospital Accra, Axim, Cape Coast, Koforidua, Saltpond, Tamale and Winneba) ...	0 6½	0 6	0 4

323. At Tarkwa a new African Hospital to replace a very old and unsatisfactory one was completed during the year. There is an administrative block, and a main block containing a male ward of 12 beds, a male ward for officials of four beds, a female ward of four beds, a maternity ward of two beds. A separate pavilion has also been erected for the treatment of six male and four female patients suffering from tuberculosis.

324. It is proposed to instal a full power X-ray plant at this hospital during 1937. This will prove extremely useful not only for the early diagnosis of tuberculosis and for fractures, etc., but for the purpose of obtaining accurate knowledge of the prevalence of silicosis in the mines.

ACCRA.

325. The Gold Coast Hospital continued its excellent work for the African community not only as a teaching centre but also as a general hospital. The work grows year by year as the following table indicates :—

TABLE XXV.

WORK DONE AT GOLD COAST HOSPITAL.

	1934.	1935.	1936.
Out-patients	15,612	17,983	18,807
In-patients	3,085	3,140	3,327
Major operations	414	683	653
Minor operations	1,063	1,482	1,634
Daily average of in-patients	236	233	201

326. The steady increase in the work of the out-patient department has necessitated reorganisation of the dispensary and dressing shed. An addition has been made to the out-patient block of a female dressing shed and an examination room, giving a privacy which was hitherto not available. It is hoped to make a similar provision for the male dressing shed. This would enable foul ulcer cases to be treated separately from ordinary wound cases, etc.

327. The need for additional accommodation to deal with cases of infectious diseases (typhoid, dysentery, etc.) had been becoming more urgent each year and provision is being made for the erection of an infectious and tuberculosis block during 1937.

328. The details in Table XXVI show the work accomplished during the year in the X-ray and electro-therapeutic department.

TABLE XXVI.

Radiography.		Electro-theraphy and massage.	
Barium	86	Diathermy	773
Chest	160	Faradism	58
Dental	153	Galvanism	1,555
Gall-bladder	15	Ionisation	17
General	1,348	Massage	3,194
Maternity	65	Radiant heat	431
Urinary tract	63	Ultra-voilet ray	366
		X-ray treatment	51
Total	1,890	Total attendance	6,445
		Total number of patients	354
Of these 211 were Europeans and 1,679 Africans.		Of these 10 were Europeans and 344 Africans.	

329. The Venereal Disease Clinic continued its useful work during the year. The female attendances, however, were not as good as might be expected, although every endeavour is made to induce patients to make use of the clinic.

330. The table below gives the details for the past three years.

TABLE XXVII.

	1934.	1935.	1936
Total number of new cases (male)	946	1,356	988
Total number of new cases (female)	359	242	249
Total number of cases receiving treatment (male)	1,583	1,549	1,228
Total number of cases receiving treatment (female)	633	319	307
Total number of new cases (male and female)	1,305	1,598	1,237
Total number of cases receiving treatment	2,216	1,968	1,535

KUMASI.

331. The African Hospital, Kumasi, is of antiquated design and conditions of work are very trying for the staff.

332. A new African Hospital with a large special section for maternity work is a real need. In spite of difficulties, however, excellent work continues to be performed. A slight increase over last year took place in the out-patients figures, and the in-patient figure which has been going up each year reached the highest point yet recorded. *See* Table XXVIII.

TABLE XXVIII.

	1934.	1935.	1936.
Out-patients	13,088	12,660	12,714
In-patients	2,465	2,758	2,989
Major operations	153	141	139
Minor operations	576	509	631
Daily average of in-patients	134·5	140	139

333. Some minor structural changes in both the European and African hospitals were effected during the year. To the European hospital were added a new block containing bath-rooms and other conveniences. At the African hospital two large concrete water tanks were converted into a room for a hot water plant and a laundry store respectively.

TAMALE.

334. As at Kumasi an increase took place in the number of in-patients but there was a considerable drop in the number of out-patients.

335. The fall in the number of out-patients is most probably due to the establishment of the village dispensary system in the north. These dispensaries, which are very popular, are no doubt dealing with a number of patients who would formerly have had to travel to a larger centre. *See* table below.

TABLE XXIX.

	1934.	1935.	1936.
Out-patients	20,325	18,411	13,572
In-patients	1,490	1,344	1,526

336. During the year the conversion of the large main store into a female ward was effected in order to provide improved accommodation for women. A new male nurses block of double quarters and a kitchen were also erected.

337. Increased accommodation is urgently required for such ambulatory cases as entropion and trypanosomiasis.

338. The Dagomba Native Administration has undertaken to assist in building a camp of the ordinary Northern Territories round houses to accommodate about 40 patients altogether.

339. This will relieve congestion in the main wards, and is a highly satisfactory and commendable piece of self-help on the part of the Native Authority and of its co-operation with Government.

PROPOSED NEW HOSPITALS.

340. At Cape Coast and Sekondi two out-of-date and inadequate African Hospitals exist. Plans have been drawn up during the year for two modern hospitals of 80 beds with a special maternity wing and accommodation for infectious cases, etc., in each.

341. The Cape Coast one will be erected during the coming year, followed at once by that for Sekondi.

342. The European Hospital at Kumasi is an antiquated building and unsuitably sited. Plans for a well-sited modern hospital will be proceeded with during the coming year.

VILLAGE DISPENSARIES.

343. In the Annual Report for last year a summary of the history of the inauguration and aims of the village dispensary system was given.

344. The following table gives a list of village dispensaries, their distribution, and approximate dates of opening :—

TABLE XXX.

	In existence.	Taken over by Dispenser.	Under construction or to be completed in 1937.
COLONY :			
Eastern Province	Dabala (b)	18–4–36	Abomoso (b)
	Nkawkaw (a)	2–9–36	
Central Province	Fante Yankumasi. (b)	13–12–36	
	Elmina (a)	Long established	
Western Province	Anwiawso (b)	14–5–36	Asafo (b)
	Enchi (b)	31–3–33	
	Essiama (b)	23–3–36	
	Wioso (a)	May, 1936	
ASHANTI	Wenchi (b)	June, 1936 ...	Kintampo (b)
			Attabubu (b)
NORTHERN TERRITORIES	Bole (b)	21–3–33	Zabzugu (b)
	Gambaga (a)	Long established	Chereponi (b)
	Garu (b)	28–6–36	Ketiu (b)
	Tumu (b)	June, 1935 ...	Fian (b)
	Walewale (b)	? 2–36	Sandema (b)
	Zuarungu (a	Long established	Hian (b)
	Kete Krachi (a)	Long established	Karaga (b)

345. This table includes (*a*) dispensaries of Government already in existence (*b*) village dispensaries provided by Native Administrations often with Government assistance. These are indicated in the table by the letters (*a*) and (*b*), and on the map as African and village dispensaries respectively. At Hohoe there is a German private practitioner who is subsidised by Government for special work.

346. After 1937 it is proposed to proceed more slowly than hitherto with the extension of the system, in order that we may observe the results of its working and note any faults which may require remedy. For example, in certain instances it has been found that dispensers have been inclined to assume more responsibility than they are capable of and not to refer to the nearest medical officer cases with which they are not qualified to deal. There is also to be considered the fact that if more dispensaries are opened in an area than a medical officer can efficiently supervise in addition to his other duties, results are not likely to prove satisfactory.

347. The progress made in the Northern Territories under the energetic guidance of the Chief Commissioner is largely due to the sound development there of Native Administrations and affords an example worthy of emulation by the rest of the Colony.

GOVERNMENT MEDICAL SCHOLARSHIP.

348. Under the present scheme three young men are at present undergoing medical training at Edinburgh. Two are at Achimota and provision has been made for a sixth in the coming year.

GOVERNMENT DENTAL SCHOLARSHIP.

349. The Secretary of State has approved of the institution during 1937 of a similar scheme for the training of a certain number of young Africans to qualify in dentistry so that on their return to the Gold Coast they may engage in the practice of their profession at such centres as Sekondi and Kumasi. Regulations governing their award, etc., have been formulated and are awaiting approval.

MISSION HOSPITALS AND DISPENSARIES.

Basel Mission.

350. At the large hospital of 56 beds maintained by the Basel Mission at Agogo—the only Mission hospital in the Colony—the staff consists of two doctors, three European Nursing Sisters, two Dispensers and eight African Nurses. It is well equipped and an X-ray apparatus will shortly be installed.

351. An increase took place during the year in the work of all branches. Outlying dispensaries in connection with Kumawu and Effiduase and Dome are served from the central institution.

352. According to returns furnished a total of 976 African in-patients were treated as compared with 604 in 1935. The out-patient figure rose from 3,394 in 1935 to 5,810 in 1936. Ninety-nine European in-patients (71 male, 28 female) as compared with 70 in 1935 were dealt with during the year.

REPORT ON THE WORK OF THE DENTAL CLINIC.

353. The Dental Surgeon was on duty during the entire year.

354. Two visits to Kumasi, Sekondi and Cape Coast respectively were paid during the year.

355. Treatment was given to 535 European and 2,919 African officials, making a total of 3,474 officials, also to 595 non-official Europeans and 1,111 non-official Africans making 1,706 in this class, and a grand total of 5,180. The following table is an analysis of the figures for the years 1934 to 1936 :—

TABLE XXXI.

	1934.	1935.	1936.
Officials Europeans	467	281	555
Officials Africans	2,367	1,350	2,919
Non-officials Europeans...	437	245	595
Non-officials Africans	423	354	1,111
Total	3,694	2,230	5,180

356. The following table shows the number of dental operations performed during the year :—

TABLE XXXII.

	Officials.	Non-officials.	Total.
(*a*) Extractions	2,457	1,074	3,531
Local Anæsthesia	2,445	1,059	5,504
General Anæsthesia	12	15	27
(*b*) Fillings :			
Gold	8	3	11
Amalgam	355	232	587
Porcelain	93	96	189
Cement	301	211	512
Temporary	114	102	216
(*c*) Dressings :			
Including root treatment	609	573	1,182
(*d*) Scalings	458	401	859
(*e*) Bridges, crowns and other restorations	9	11	20
(*f*) Dentures	105	73	178
(*g*) Repairs to bridge, dentures and crowns	131	66	197
(*h*) Minor treatments	32	28	60

357. The chief pathological conditions met with were as follows :—

TABLE XXXIII.

Conditions.	
(1) Dental caries ...	2,056
(2) Alveolar Abscess ...	326
(3) Pulpitis acute and chronic ...	78
(4) Periodonitis ...	43
(5) Excessive calcific deposit ...	21
(6) Cases diagnosed as true pyorrhœa alveolaris (chronic sub-periodonitis ...	425
(7) Gingivitis ...	57
(8) Septic roots ...	173
(9) Stomatitis ...	21
(10) Sepsis arising in connection with eruption of permanent dentition ...	34
(11) Malposition of teeth ...	15
(12) Fracture of teeth ...	26
(13) Necrosis of alveolus ...	6
(14) Neuralgia of non dental origin ...	1
(15) Polypus of pulp ...	5
(16) Pulp stones ...	—
(17) Excessive post-extraction hæmorrhage ...	5
(18) Supernumerary teeth ...	18
(19) Dental cyst ...	3
(20) Epulis ...	2
(21) Fibrous sarcoma of jaw ...	1
(22) Antrum disease ...	2
(23) Cancrum oris ...	—
(24) Fracture of jaw ...	—
(25) Chronic perforating hyperplasia of pulp ...	1

W. H. DONALD,
Dental Surgeon.

VII.—PRISONS AND ASYLUMS.

(a) Prisons.

(Report from information furnished by the Director of Prisons.)

358. The Government prisons consist of four central prisons and 21 local prisons. The former are situated at Accra, Sekondi, Kumasi and Tamale and in these four prisons all prisoners sentenced to two years imprisonment and over are confined.

359. The local prisons are situated at various district headquarters throughout the country and accommodate the shorter sentenced prisoners. These prisons vary considerably in size and construction ; until this year several were overcrowded and badly ventilated. During the year, however, a large amount of reconstruction work has been performed and with few exceptions the accommodation is now adequate in all local prisons.

360. The chief work done in this respect is the building of a new annexe at Keta prison, the construction of a new block of cells at Sunyani, and an increase of yard space and reconstruction of the prisons at Wa, Navrongo, and Bawku in the Northern Territories.

361. A large annexe has been made to the prison at Kumasi which formerly was very congested.

362. Female prisoners are now accommodated in a large spacious cell at Elmina prison, in which certain alterations have been made.

363. In all prisons excepting Tamale all prisoners sleep in association. The majority of the cells accommodate three prisoners while there are large cells which can hold up to 15 prisoners. At most prisons there are cells specially set apart for segregation or for the purpose of solitary confinement.

364. All prisons are regularly visited by Government Medical Officers and there are infirmaries at the four central prisons under the immediate charge of warder dispensers.

365. At Elmina there are wards for the segregation of prisoners suffering from phthisis and leprosy.

366. Long sentence prisoners are mainly employed on various trades such as carpentry, tailoring, masonry, shoemaking, etc. Short sentence prisoners are employed as a rule on extramural work such as sanitation, farming and station duties. The hours of labour are from 6 a.m. to 11 a.m. and from 12.30 p.m. to 3.30 p.m.

367. The daily population was 1,845 as compared with 1,906 in the previous year. The following return shows a comparative statement of deaths and the daily average number on the sick list :—

Year.	Daily average on Sick List.	Percentage.	No. of deaths.	Deaths per thousand.
1935	41·65	2·18%	19	9·9
1936	51·13	2·76%	33	17·81

368. The chief diseases were gonorrhœa, malaria, hook-worm, chicken-pox, constipation and various forms of ulcers. There were no serious epidemics.

369. The rations issued were according to scale with the exception of variations in districts where the staple diets of the inhabitants differ. For instance, millet and guinea-corn replace maize and cassava in the Northern Territories prisons whilst in certain Ashanti prisons yams and plantains are substituted. The actual weights of food issued are constant.

370. Prisoners are weighed monthly and usually show an increase and are as a general rule discharged in a better physical condition than on admission. In addition the majority have probably acquired some ideas of elementary hygiene and sanitation.

(b) Asylum.

COLONIAL ASYLUM, ACCRA.

371. The staff at the Colonial Asylum on the 31st of December, 1936, was as follows :—

Alienist Officer	1
Head Attendant	1
Assistant Attendant	1
Matron	1
Senior Male Mental Nurses	3
Male Mental Nurses	22
Female Mental Nurses	4
Gatekeeper	1

372. During the year three male Mental Nurses were promoted to new posts, termed Senior Male Mental Nurses, at salaries commencing at £154 per annum and rising by increments of £10 per annum to £208. The staff was augmented by five male Mental Nurses in April, 1936. This increase was necessary owing to the greater number of patients now confined in the Asylum.

373. On January the 1st, 1936, the number of inmates was 445. These were graded as follows :—

Male criminal	68
Male pauper	313
Female criminal	1
Female pauper	63
	445

374. The number of admissions during the year was :—

Male criminal	29
Male pauper	99
Female criminal	2
Female pauper	21

375. The number of admissions shows an increase of seven as compared with 1935. During the period under review 94 patients died. This is an increase of 20 as compared with 1935 and corresponds to 15·8 per cent of the total population of the Asylum during the year or 62·2 per cent of the admissions. The number of patients discharged was 38 this being 6·4 per cent of the number of inmates of 25·1 per cent calculated on the admission rate. Three patients escaped, and only one was recaptured.

376. The number of patients on the 31st December, 1936 was 461 an increase of 17. This was made up as follows :—

Male criminal	83
Male pauper	308
Female criminal	3
Female pauper	67

377. The following table gives a comparison of the statistics for the years 1935 in England and Wales and 1936 in the Gold Coast :—

TABLE XXXIV.

	England and Wales 1935.		Gold Coast 1936.	
	Male.	Female.	Male.	Female.
1. Percentage distribution of the sexes ...	44.3	55·7	85·4	14.6
2. Death-rate per cent of the daily average	7.13	6·56	20·7	19.7
3. Discharges calculated as per cent of admission	32.2	33·3	27·3	13
4. Percentage of first admissions in all admissions	76·6		98	
5. No. of cases of Pulmonary Tuberculosis per 1,000 inmates	9·0		36·9	
6. Deaths from Pulmonary Tuberculosis per thousand inmates	4·6		23·5	
7. Incidence of Dysentery per thousand inmates (Figure includes Balantidial Amœbic and Flagellate Dysentery in case of Gold Coast)	3·9		20·1	
8. Deaths from Dysentery per thousand inmates (as in case of Gold Coast) ...	0·4		11·7	

378. As mentioned in previous reports the death-rate in the Asylum is unsatisfactory. The number of deaths for the population is too high, but little can be done to improve this figure until proper accommodation and adequate nursing facilities for the physically sick are provided. It should be borne in mind, however, that many of the deaths occur in patients who are in very poor health when admitted to the Asylum. Cerebral syphilis adds its quota to the number of deaths and its fatal termination cannot be prevented. In addition a cold spell occurred during June, July and August. This lowered the resistance of some of the weaker inmates and thereby increased the death-rate. The recovery rate is low when compared with the same figures in modern mental hospitals.

379. But as already stated no improvement can be expected until the present overcrowded antiquated institution is replaced by a modern asylum with proper accommodation and facilities for grading the patients.

380. The general health of the patients during the year was fair. Some of the new admissions were in a very poor state of health on their arrival.

381. There appears to be a slight increase of pulmonary tuberculosis. Nineteen cases were treated this year as compared with thirteen in 1935.

382. Trypanosomiasis associated with mental disease showed a slight decrease for the year. The condition, in the early stages, appears to stimulate almost any psychosis. The mental and physical signs are no guides as to prognosis of the condition. It has also been noted that the mental changes frequently do not begin to clear up until serveral months after the completion of a course of tryparsamide.

383. Cerebral syphilis shows a slight increase for the year. The condition, however, is an important one as it adversely affects the death-rate. It appears to run a very acute and rapid course to a fatal termination in this country. Although the infection gives the usual blood and cerebro-spinal fluid changes, the writer is not convinced that the condition is truly syphilitic. No irregularity of pupils or abnormalities to the light reflex have been observed. He considers that the disease may be a manifestation of tertiary yaws. Its course does not appear to be influenced by the exhibition of the usual arsenical and bismuth preparations.

384. The building at present is designed to hold a maximum of 330 patients, but the average daily population during the year has been 456·1 or 38·1 per cent in excess of the designed accommodation. The greatest number in any one day was 470.

385. The buildings are kept in a good state of repair and unskilled labour is plentiful for the purpose of white washing the walls and generally keeping the place clean.

386. The diet at the Asylum continues to be excellent. Individual likes and dislikes are complied with as much as possible. All inmates receive three meals of carbohydrates in the form of rice or cassava or cocoa-yam, or kenki. In addition to this, a ration of hot arkassah (maize gruel) is issued to each patient every morning. Soup of the following varieties, viz., ground nut, palm nut, palm oil, and plain soup is given twice a day accompanied by either fresh meat, salted herrings or cod fish.

387. The physically sick receive a special invalid diet composed of fresh fish, soup, vegetables and fufu (pounded yam or cassava). Although the dietary continues to improve it is gratifying to note that the cost per head per patient per day remains at approximately the same low level as last year.

388. A limited number of patients are employed in the Asylum farm and garden. A certain number attend to the sanitation of the institution which involves washing clothes, removal of night soil, flushing of drains and white-washing. A number of men are employed in the preparation and cooking of the food. This is no light task as it involves preparing meals three times a day for 461 persons. Needless to say, this work is eagerly sought after. A number of demented and harmless patients have shown a certain amount of initiative by making baskets and mats.

389. The sanitation and hygiene of the Asylum is fairly satisfactory. Water of good quality is accessible in all airing courts and is unlimited in quantity. Each portion of the hospital has a bathing-room with a number of showers in each.

390. During the year a visit was paid to the Colony by Dr. Cunyngham Brown, C.B.E., who was appointed by the Secretary of State for the Colonies to report on the lunacy problem in West Africa. His report has not yet been received.

391. A site about 12 miles from Kumasi has been acquired by Government for the purpose of erecting a new institution on modern lines. When Dr. Cunyngham Brown's report is received it will be possible to prepare an estimate of capital and recurrent costs.

F. MACLAGAN,
Alienist Officer.

VIII.—METEOROLOGY.

(*a*) METEOROLOGY—MONTHLY AVERAGE FIGURES FOR THE YEAR 1936.

TABLE XXXV.

	TEMPERATURE.					RAINFALL.			WIND.
	Solar max.	Min. on grass.	Shade max.	Range.	Mean.	Amt. in inches.	Degree of humidity.	Gen. direction.	Average force.
Accra ...	140·4	70·9	83·3	14·2	78·5	2·18	82·7	S.W.	2·2
Kumasi ...	131·3	68·4	87·4	25·8	78·9	4·93	85·7	W	1·1
Sekondi ...	144·7	69·0	89·3	32·7	76·2	2·27	66·9	S.	1·4
Takoradl ...	134·8	71·9	89·8	21·5	81·4	1·94	76·9	S.W.	2·1
Tamaie ...	151·7	66·5	93·9	31·3	81·7	3·00	64·6	S.W.	2·0

(*b*) METEOROLOGICAL OBSERVATIONS, LABORATORY GROUNDS, KAWLI BU, ACCRA, 9 A.M., READINGS, 1936.

TABLE XXXVI.

	Rainfall in inches.	Highest maximum temperature recorded.	Lowest temperature recorded.	Daily average mean temperature.	TEMPERATURE OF THE DEW POINT.	
					Highest.	Lowest.
January ...	0·14	86	79	81·2	76	69
February ...	0·5	88	75	80·7	77	71
March	2·23	88	75	82·1	78	70
April	2·31	87	76	81·5	77	72
May	3·69	87	75	80·6	76	68
June	5·58	83	73	74·3	75	69
July	0·13	79	70	72·7	73	68
August ...	Nil.	77	70	73·6	71	66
September ...	2·16	82	72	76·5	74	69
October ...	2·17	88	71	79·2	75	70
November ...	1·79	90	69	80·8	76	70
December ...	1·7	91	63	79·1	76	63

NOTE.—A Stevenson screen was used from 19th October.
Total Rainfall ... ... 22·40 inches.

IX.—SCIENTIFIC.

(a) Annual Report of the Laboratory Service.

392. This report refers to the work done in the Accra Laboratory during the period 1st January to 31st December, 1936.

REPORT ON ROUTINE WORK.

393. *Yaws and Syphilis.*—Three thousand, one hundred and seventy-five Wasserman tests were carried out ; 41 per cent were positive. These results correspond closely with those of the last five years.

394. *Infections due to organisms of the Salmonella group.*—The following table shows the number of infections in this group based on cultivation, agglutination and post-mortem findings.

TABLE XXXVII.

	CULTURE.			Agglutination.	P.M.	Total.
	Blood.	Fæces.	Urine.			
S. typhi	9	1	—	62	6	78
S. paratyphi A	—	—	—	3	—	3
S. paratyphi C (Hirschfeld) ...	2	—	—	3	1	6
S. paratyphi B	—	—	—	7	—	7
Salmonella group not differentiated	—	—	—	11	—	11
Total	—	—	—	—	—	105

395. *Dysentery.*—(*a*) *Protosoal.*—2,715 stools were examined microscopically E. histolytica was found 36 times. Balantidium coli was found ten times, and Lamblia intestinalis 14 times.

(*b*) *Bacillary.*—308 stools were examined bacteriologically with the following results :—

TABLE XXXVIII.

Organism.	Number of times isolated.
Bact. flexneri	23
Bact. shiga	2
Sonne's bacillus...	1

396. *Typhus.*—Over a period of some years sera from febrile and other cases have been tested against Proteus X19 suspensions with negative results.

397. However in November, 1936 a serum taken on the 18th day of illness was sent in by the Medical Officer, Mpraeso. This agglutinated the Oxford Standard Proteus O X19 suspension in a dilution 1 in 1280 and the Oxford Standard Typhosum " H " suspension, 1 in 25. There was no agglutination with Typhosum " O " suspension or any other Salmonella suspension.

398. Serum taken four days later agglutinated Proteus O X19, 1 in 2,560 and Typhosum " H," suspension 1 in 40. This appears to have been a genuine case of tropical typhus. The clinical notes on the case appear at Appendix II (*b*).

Blood Cultures :—

Organisms.	Number of times isolated.
Bact. coli	4
Bact. coli and pneumococcus	1
Bact. friedlander	1
Cl. welchii	1
Pneumococcus	3
Salmonella typhi	9
Salmonella paratyphi C.	2
Staph. aureus	1
Strep. anærobic	1
Strep. hæmolyticus	4
Culture—positive	27
Culture—negative	64
Total Cultures	91

399. *Histological.*—Tissues from 339 humans and 46 animals were sectioned. The following malignant tumours (10·9 per cent of human cases) were met with.

Epitheliomatous ulcers	6
Melanoma	3
Carcinoma—Lip	1
Palate	2
Stomach	1
Nose	1
Bronchus	1
Breast	2
Orbit	1
Antrum	2
Thyroid	2
Cervix uteri	1
Corpus uteri	1
Neck—origin uncertain	2
Site unknown	2
Urinary bladder	1
Sarcoma—Round cell	3
Spindle cell...	3
Lymphosarcoma	1
Endothelioma—skull	1

Other conditions met with.

Syncytioma	1
Hodgkin's disease	2
Fibroma	2
Epulis	2
Lipoma	2
Caruncle	1
Ovarian dermoid	1
Fibroids (many others not cut)	1
Angioma	1
Juxta-articular node	1
Radiculodental cyst.	1
Colloid goitre	1
Adenoma-thyroid	1
Mixed salivary gland tumour	1
Giant-cell tumour of bone	2
Thymoma	1

400. Dog brains for rabies were examined by section of the hippocampus and cerebellum. Rapid staining with phloxin and acidified methylene blue gave satisfactory results—though sections stained thus faded rapidly—Iron hæmatoxylin was satisfactory for permanent preparation. Fifteen dog brains out of 42 examined showed Negri bodies. Three human cases showed Negri bodies. Tissues from two cases of Yellow Fever were examined. Dioxane (Diethylene Dioxide) was used extensively for the transference of tissues direct from water to paraffin wax. This method (Lancet 8th December, 1934, 1,279), has proved most satisfactory.

401. *Sickle-cell anæmia.*—As a check on the number of sickle-cells found in post-mortem tissues, sealed wet blood films were made from 200 out-patients (100 male and 100 female)—as far as possible unselected consecutive attendances. Of these 13 females and 16 males showed sickle-cells within 24 hours.

After this similar preparations were made from every case in which a blood cut was done. These, naturally, were largely clinically selected as anæmias.

	Total.	Sickle.	%.
Autopsy	90	17	19
Male out-pt.	100	16	16
Female out-pt.	100	13	13
Clinical Anæmia	90	15	16

From these figures there is no particular reason to consider the sickle-cell trait dangerous, but several of the autopsies were of young otherwise healthy persons. Also it is quite possible that sickle-cells were over-looked in some of the negative cases. Histologically the spleens were of two kinds. One in which the malpighian corpuscles were visible and surrounded by blood. These spleens were large. In the second type the spleen structure was hardly recognisible, the tissue consisting of a network of shrunken cells with the interstices packed with red cells ; such spleens were not enlarged or even smaller than normal. Much blood pigment was present in both varieties.

402. *Diphtheria.*—C. diphtheriæ was isolated from eleven cases of clinically diagnosed diphtheria. The virulence test was applied to seven of these strains all of which proved virulent. Two of the eleven cases died. As noted in previous years, the cases were all sporadic ones and apparently none of the immediate contacts contracted the disease, at any rate in a clinical form.

Throat swabs from 212 African school children between nine years and 20 years of age were examined for C. diphtheriæ. The swabs were inoculated on to inspissated sheep or ox serum and examined next day, films being stained with Loeffler's Methylene blue and Albert's stain. Five loopfuls (4 mm loop) of a thick saline emulsion of all the cultures whether showing morphological C. diphtheriæ or not, were spread over a plate of Horgan and Marshall's tellurite medium and examined 48 hours later. Suspicious colonies were inoculated on to inspissated serum and examined next day. Bio-chemical and virulence tests were done on all morphologically positive cultures. Virulent strains were isolated from two of the children one a boy aged ten years who was schick positive at the time and the other from a girl aged 16 years who was Schick negative. Probably some carriers were not detected as nasal swabs were not taken. Avirulent strains were isolated six times. It is interesting to note that of 15 virulent strains examined, all except one have been of the mitis type (some have been rather atypical) the one exception was of the intermediate type. No gravis strains have been met with. I am very grateful to Dr. R. A. O'Brien, Director of the Wellcome Physiological Research Laboratories, for allowing 15 of the strains to be examined in his laboratories. I am also grateful to the Director of Education, the late Principal of Achimota, and the Headmasters of the Government Senior Boys School and Royal School, Accra, for their help and co-operation in this work.

TABLE XXXIX.

Bacteriological Examinations of Water Supplies.

Source.	Negative.	*B. coli present ; specimens enumerated according to smallest volume (c.c.s.) in which B. coli found.*					Totals.
		100	10	1	0·1	0·01	
Accra.							
Final Filter No. 1	17	1	—	—	—	—	18
,, ,, No. 2	16	—	1	—	—	—	17
,, ,, No. 3	17	—	—	—	—	—	17
,, ,, No. 4	17	1	—	—	—	—	18
,, ,, No. 5	18	1	—	—	—	—	19
,, ,, No. 6	16	—	—	—	—	—	16
Laboratory Tap	52	1	—	—	—	—	53
Effluent No. 4 degrosoeur ...	—	—	1	—	—	—	1
Town Standpipes	3	—	—	—	—	—	3
Mineral Waters including Soda Waters	306	—	2	—	—	—	308
Winneba Water Supplies ...	11	—	1	—	—	—	12
Kumasi ,, ,, ...	13	2	—	—	—	—	15
Nsawam ,, ,, ...	—	—	—	—	2	—	2
Begoro ,, ,, ...	—	—	—	—	2	2	4
Konongo ,, ,, ...	2	1	2	1	—	—	6
Jakai ,, ,, ...	—	—	—	—	6	—	6
Alemi ,, ,, ...	—	—	—	—	1	—	1
Ntsontu ,, ,, ...	—	—	—	—	1	—	1
Ashanti Adowsena Gold Fields Water Supplies	—	—	—	1	—	—	1
Totals	488	7	7	2	12	2	518

TABLE XL.

Statistical Return from the Routine Divisions inclusive of repeated Examinations.

Examinations of blood :—	
(*a*) For parasites, total ...	5,165
1. Malaria ...	1,328
2. Relapsing fever ...	—
3. Microfilaria ...	66
4. Trypanosomiasis ...	31
5. Negative ...	3,740
(*b*) Differential and complete counts ...	655
(*c*) Agglutinations ...	380
(*d*) Blood cultures ...	97
(*e*) Wasserman reactions ...	3,175
(*f*) Chemical examinations, total ...	130
1. Van den Bergh ...	2
2. Urea ...	107
3. Dextrose ...	21
(*g*) Grouping ...	34
Examinations of fæces, total ...	3,023
(*a*) General examinations ...	2,715
(*b*) Bacteriological examinations ...	308
Examinations of urine, total ...	1,452
(*a*) General examinations ...	1,236
(*b*) Bilharzial infections ...	54
(*c*) Bacteriological examinations ...	216
Examinations of sputa ...	735
Miscellaneous and pus examinations ...	581

Cerebro-spinal fluid examinations	41
Post-mortem examinations	202
Bacteriological examinations of drinking waters	518
Animal examinations and inoculations	52
Rat examinations	2,372
Veneral disease smears, total	1,481

TABLE XLI.

Post-mortem Examinations.

Infectious and Parasitic Diseases.

Typhoid fever	6
Paratyphoid fever (S. paratyphi C)	1
Meningitis (pneumococcal)	3
Generalised tuberculosis	10
Septicæmia (streptococcal)	5
Septicæmia (pneumococcal)	1
Malaria (cerebral)	3
Rabies	3
Diphtheria	2
Encephalitis (trypanosomiasis)	2
Influenza	1
Osteomyelitis	1

Cancer and other Tumours.

Carcinoma rectum	1
Carcinoma stomach	1

Diseases of Circulatory System.

Aortitis (syphilitic)	3
Infarct of heart	1
Aneurysm of aorta (rupture)	3
Atheroma of aorta	3
Heart block (gumma bundle of his)	1
Endocarditis	2
Pericarditis	1

Diseases of Respiratory System.

Lobar-pneumonia	10
Broncho-pneumonia	15
Pulmonary tuberculosis	11
Acute bronchitis	2
Bronchiectasis	1
Pleurisy and acute oedema of lung	1

Diseases of Digestive System.

Peritonitis (tubercular)	2
Peritonitis	8
Bacillary dysentery	3
Amœbic dysentery	2
Carbon tetrachloride poisoning	1
Acute intestinal obstruction	1
Chronic intestinal obstruction	1
Hæmorrhagic pancreatitis	2
Membranous diarrhoea	1

Diseases of the Genito-urinary System.

Chronic nephritis	11
Pyelitis	3
Uræmia	5

Diseases of Pregnancy.

Eclampsia	1
Toxæmia of pregnancy	1

Diseases of early Infancy.

Birth injuries	1

Death from Violence.

Cerebral hæmorrhage	3
Multiple injuries	8
Suicide	5
Fracture of skull	8
Burns	4
Ruptured spleen	1
Ruptured kidney	1
Laceration of brain (contre coup)	3
Stab wounds	2
Fractured pelvis	1
Fractured spine	1
Gun shot wounds	3
Drowning	1

Ill-defined Diseases.

Toxæmia of uncertain origin	5
Status lymphaticus	1
Hodgkin's diesase	1
Hyperpyrexia with sickle-cell trait	1
Post-operative shock and hæmorrhage	1
Leukæmia	1
Cause undetermined (due to decomposition, etc.)	5
Malnutrition and avitaminosis	8

G. ROBINSON,
Senior Pathologist.

(*b*) Annual Report of the Analytical Chemist.

403. The total number of samples dealt with in the Chemical Laboratory during 1936 was 2,291. This total was made up as follows :—

(*a*) *Coroners and Medical Officers.*		
Viscera	21	
Medicines, etc.	6	
		27
(*b*) *Customs.*		
Brandy	13	
Geneva	20	
Gin	10	
Liqueur	7	
Rum	12	
Whisky	32	
Beer and stout	61	
Port	9	
Sherry	21	
Tonic and medicated wine	140	
Vermouth	54	
Wine (other kinds)	531	
Fabric	10	
Medicine	82	
Methylated spirit	29	
Milk	67	
Paint, Varnish, etc.	9	
Perfumery	82	
Miscellaneous	77	
		1,266
(*c*) *Medical and Health Services.*		
Drinking water	14	
Miscellaneous	16	
		30
(*d*) *Police.*		
Illicit spirit	924	
Medicine, etc.	7	
Miscellaneous	22	
		953
(*e*) *Other Departments.*		
Miscellaneous	15	
		15
Total		2,291

404. This is a slight decrease on last year's record total.

405. The list of " Other Departments " served by the laboratory is a formidable one, comprising—

Accra Town Council
Animal Health
Medical Department, Sierra Leone
Political (acting on behalf of a Divisional Chief)
Public Works
Railway.

This, with Coroners, Customs and Police enumerated in paragraph 403, makes nine departments outside the Medical.

406. A sample of cassava flour submitted by the Director of Medical Services, Sierra Leone, was tested for hydrocyanic acid. No free hydrocyanic acid was found, but on standing in water this acid appeared to the extent of about 0·005 per cent, indicating the presence of a very undesirable quantity of cyanogenetic glucoside. Though normally present in cassava roots, this should have been completely removed in the preparation of an edible product.

407. A solution of a bismuth salt was seized from a person accused of practising medicine without being registered as a medical practitioner. Reference was made in last year's report to the death of two children following injections of bismuth.

408. A specimen of cerebro-spinal fluid from a case showing toxic symptoms following treatment with tryparsamide was found to contain a trace of arsenic.

409. The samples of illicit spirit or " Trade Spirit " show much greater uniformity now than was formerly the case. Except when intentionally coloured they are nearly always water-white ; and the alcoholic strength rarely differs greatly from that of imported geneva. It appears to me to be at least as likely that greater skill in the design and manufacture of stills has been attained as that greater manipulative skill has been achieved.

R. W. CLARKE,
Analytical Chemist.

D. DUFF,
Director of Medical Services.

RETURNS.

RETURN A.

MEDICAL, HEALTH AND LABORATORY SERVICE STAFF ON THE 1ST JANUARY, 1936.

	Authorised establishment.	Provision in estimates.	Vacancies.
Director of Medical Services	1	1	—
Deputy Director of Medical Service	1	1	—
Assistant Director of Medical Service	2	1	—
Specialists (one surgical and one medical)	2	2	—
Senior Medical Officer	6	6	—
Medical Officers (Colonial Medical Service)	37	37	—
Alienist Officer	1	1	—
Woman Medical Officer	1	1	—
Medical Officers (Gold Coast)	5	5	—
Junior Medical Officers (Gold Coast)	2	2	—
Radiographer	1	1	—
Assistant Radiographer	1	1	—
Analytical Chemists	2	2	—
Dispensers' Instructor	1	1	—
Medical Storekeeper	1	1	—
Secretary, Gold Coast Hospital	1	1	—
Matron, European Nursing Staff	1	1	—
Senior Nursing Sisters	3	3	—
Nursing Sisters	27	27	1
Chief Dispensers	2	2	—
Office Assistant and Accountant	1	1	—
First Division Dispensers	6	6	—
Second Division Dispensers and Dispensers-in-Training	91	91	—
Laboratory Attendants	2	2	—
First Division Nurses	6	6	—
Second Division Nurses and Nurses-in-Training ...	198	198	—
Midwives and Midwives-in-Training	6	6	—
Midwives at fixed salary	3	3	—
First Division Clerks	2	2	—
Second Division Clerks	24	24	—
Lodge-Keepers	2	2	—
Telephone Operators	4	4	—
Lunatic Asylum.			
Head Attendant	1	1	—
Assistant Attendant	1	1	—
Mental Nurses	24	24	—
Matron	1	1	—
Gate-Keeper	1	1	—
Dental Branch.			
Dental Surgeon	1	1	—
African Government Dentist	1	—	—
Health Branch.			
Deputy Director of Health Service	1	1	—
Senior Health Officers	3	3	—
Medical Officers of Health	8	8	—
Woman Medical Officers	3	3	—
Chief Sanitary Superintendent	1	1	—
Sanitary Superintendents, Grade I	6	6	—
Sanitary Superintendents, Grade II	13	13	—
Chief Clerk	1	1	—
Sanitary Inspector and Training Officer	1	1	—
Senior Division Sanitary Inspectors	2	2	—
First Division Sanitary Inspectors	5	5	—
Second Division Sanitary Inspectors and Sanitary Inspectors-in-Training	105	105	—
Storekeepers	2	2	—
Disinfector Mechanic	1	1	—
Assistant Disinfector Mechanics	4	4	—
Vaccinators	12	12	—
Second Division Clerks	18	18	—
Market Clerks	5	5	—
Senior Village Overseer	1	1	—
Village Overseers	18	18	—
Caretaker	1	1	—
Attendants	3	3	—
Nurse-Midwives	9	9	—
Second Division Dispensers	4	4	—
Second Division Nurses and Nurses-in-Training ...	13	13	—
Health Visitors	4	4	—
Engineering Fitter	1	1	—

RETURN A—*contd.*

	Authorised establishment.	Provision in estimates.	Vacancies.
Health Branch—contd.			
Laboratory Service.			
Deputy Director of Laboratory Service	1	—	—
Senior Pathologist	1	1	—
Pathologists	2	2	—
Laboratory Assistants	2	2	—
Laboratory Attendants and Laboratory Attendants-in-Training	10	10	—
Second Division Clerk	1	1	—

RETURN B.

FINANCE.

Estimated Expenditure for the year 1936.

(*a*) PERSONAL EMOLUMENTS.

Medical.

	£	*s.*	*d.*
Administrative officers	5,600	0	0
Specialists	2,800	0	0
Senior medical officers	6,856	0	0
Medical officers (European and African)	40,575	0	0
Dental surgeon	960	0	0
European nursing staff	14,911	0	0
African nursing staff and dispensers	36,315	0	0
Clerical staff	4,940	0	0
Various items, allowances, etc.	15,246	0	0
Estimated total personal emoluments	128,203	0	0
Actual total personal emoluments	118,584	12	2

Health.

	£	*s.*	*d.*
Administrative officers	1,400	0	0
Senior health officers and medical officers of health	11,279	0	0
European sanitary inspectors	9,664	0	0
African sanitary inspectors	14,899	0	0
Various items, allowances, etc.	17,084	0	0
Estimated total personal emoluments	54,326	0	0
Actual total personal emoluments	52,649	17	8

Laboratory Service.

	£	*s.*	*d.*
European staff	4,242	0	0
African staff	2,281	0	0
Estimated total personal emoluments	6,523	0	0
Actual total personal emoluments	6,385	1	4

(*b*) OTHER CHARGES.

Medical.

	£	*s.*	*d.*
Passages, transport, etc.	12,300	0	0
Hospital equipment, drugs, medical appliances, surgical instruments, etc.	20,050	0	0
Diets, medical comforts	9,300	0	0
Other items	17,021	0	0
Estimated total	58,671	0	0
Actual expenditure	62,182	18	9

RETURN B—*contd.*

Health.

	£	s.	d.
Passages, transport, etc.	6,178	0	0
General health votes	32,174	0	0
Scavengers and labourers	33,155	0	0
Estimates total	71,507	0	0
Actual expenditure	71,492	9	3

Laboratory Service.

	£	s.	d.
Passages, transport, etc.	522	0	0
General research votes	536	0	0
Estimated total	1,058	0	0
Actual expenditure	1,117	12	6

	£	s.	d.
Estimated total expenditure, Medical Department (all branches) ...	320,288	0	0
Actual total expenditure, Medical Department (all branches) ...	312,412	11	8
Revenue earned by Medical branch :—			
(*a*) Hospital fees	11,810	11	5
(*b*) Sale of drugs in private practice	293	9	9
(*c*) Reimbursement by Railway Department and Takoradi Harbour	1,964	0	0
Total	14,068	1	2

	£	s.	d.
Revenue earned by Health branch :—			
(*a*) Fines for sanitary offences	6,172	3	0
(*b*) Market and slaughter-house fees	20,753	12	11
(*c*) Poundage fees	284	15	10
(*d*) Births, deaths, and burials	815	6	0
(*e*) Reimbursement by Railway Department and Takoradi Harbour	2,045	0	0
(*f*) Conservancy fees	10,683	9	0
(*g*) Fees collected at infant clinics	4,934	15	9
Total	£45,689	2	6

RETURN C.

Health Branch.

Population of the Gold Coast and its Dependencies, Mid-year, 1936.

	Census 1921.	Census 1931.			Mid-Year 1936.
		Males.	Females.	Persons.	
A.—*Resident Africans.*					
1. Colony	1,171,913	806,466	764,828	1,571,294	1,780,969
2. Ashanti	406,193	298,341	279,737	578,078	668,320
3. Northern Territories ...	530,355	360,260	357,015	717,275	815,408
4. Togoland under British Mandate	187,939	150,464	143,207	293,671	349,179
Total	2,296,400	1,615,531	1,544,787	3,160,318	3,613,876
B.—*Resident Non-Africans.*					
1. Colony	1,530	1,839	465	2,304	2,304
2. Ashanti	447	491	133	624	624
3. Northern Territories ...	36	89	18	107	107
4. Togoland under British Mandate	20	33	10	43	43
Total	2,033	2,452	626	3,078	3,078
C.—*Maritime.*					
1. Africans	1,157	68	—	68	68
2. Non-Africans	371	104	—	104	104
Total	1,528	172	—	172	172
D.—*The Gold Coast and its Dependencies.*					
1. Africans :—					
(*a*) Resident ...	2,108,461	1,465,067	1,401,580	2,866,647	3,264,697
(*b*) Maritime ...	1,157	68	—	68	68
Total	2,109,618	1,465,135	1,401,580	2,866,715	3,264,765
2. Non-Africans :—					
(*a*) Resident ...	2,013	2,419	616	3,035	3,035
(*b*) Maritime ...	371	104	—	104	104
Total	2,384	2,523	616	3,139	3.139
E.—*Togoland under British Mandate.*					
1. Africans	187,939	150,464	143,207	293,671	349,179
2. Non-Africans	20	33	10	43	43
Total	187,959	150,497	143,217	293,714	349,222
Grand Total	2,299,961	1,618,155	1,545,413	3,163,568	3,617,126

RETURN D.

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients
for the Year 1936.

RETURN D.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS, AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
I.—*Epidemic, Endemic, and infectious diseases.*							
1. Enteric group—							
(*a*) Typhoid fever ...	1	56	6	57	2	22	6
(*b*) Paratyphoid A. ...	—	6	1	6	—	—	—
(*c*) Paratyphoid B. ...	—	—	—	—	—	1	—
(*c*) Paratyphoid C. ...	—	1	—	1	—	2	—
(*d*) Type not defined	1	9	2	10	—	—	2
2. Typhus	—	1	—	1	—	—	—
3. Relapsing fever ...	—	—	—	—	—	—	—
4. Undulant fever	—	—	—	—	—	—	—
5. Malaria—							
(*a*) Tertian	2	66	5	68	—	375	207
(*b*) Quartan	1	24	—	25	1	60	30
(*c*) Aestivo-autumnal	21	1,464	51	1,485	27	8,600	5,357
(*d*) Cachexia	—	9	1	9	—	79	48
(*e*) Blackwater ...	1	15	3	16	—	6	1
(*f*) Unclassified ...	3	326	4	329	9	4,393	4,065
6. Smallpox	—	1	—	1	—	1	—
7. Measles	1	47	—	48	—	234	159
8. Scarlet fever	—	—	—	—	—	4	2
9. Whooping cough ...	—	27	2	27	—	662	741
10. Diphtheria	—	17	5	17	—	4	12
11. Influenza	1	36	—	37	—	186	70
12. Miliary fever	—	1	—	1	—	—	—
13. Mumps	—	7	—	7	—	72	12
14. Cholera	—	—	—	—	—	—	—
15. Epidemic diarrhœa ...	—	—	—	—	—	—	2
16. Dysentery—							
(*a*) Amœbic	6	221	29	227	6	418	290
(*b*) Bacillary	—	92	18	92	3	89	60
(*c*) Undefined or due to other causes ...	3	79	9	82	1	336	246
17. Plague—							
(*a*) Bubonic	—	—	—	—	—	—	—
(*b*) Pneumonic ...	—	—	—	—	—	—	—
(*c*) Septicæmic ...	—	—	—	—	—	—	—
(*d*) Undefined ...	—	—	—	—	—	—	—
18. Yellow fever	—	3	3	3	—	—	—
19. Spirochætosis ictero-hæmorrhagica	—	—	—	—	—	—	—
20. Leprosy	413	191	21	604	431	563	336
21. Erysipelas	—	13	1	13	—	10	5
22. Acute Poliomyelitis ...	—	5	—	5	1	7	5
23. Encephalitis lethargica...	—	1	—	1	—	2	—
24. Epidemic cerebro-spinal fever	—	—	—	—	—	—	—
25. Other epidemic diseases—							
(*a*) Rubeola (German measles) ...	—	2	—	2	—	1	10
(*b*) Varicella (Chicken-pox)	8	339	1	347	1	393	70
(*c*) Kala-azar ...	—	—	—	—	—	—	—
(*d*) Phlebotomus fever	—	1	—	1	—	2	—
(*e*) Dengue	1	17	—	18	—	20	2
(*f*) Epidemic dropsy	—	1	—	1	—	37	—
(*g*) Yaws	22	265	1	287	18	43,716	33,732
(*h*) Trypanosomiasis	360	1,728	134	2,088	229	1,668	1,070
26. Glanders	—	—	—	—	—	—	—
27. Anthrax	—	2	2	2	—	2	—
28. Rabies	—	3	3	3	—	2	—
29. Tetanus	2	48	26	50	3	17	12
30. Mycosis	—	—	—	—	—	34	29
31. Tuberculosis, pulmonary and laryngeal ...	21	416	221	437	24	722	207
32. Tuberculosis of the meninges or central nervous system ...	—	2	1	2	—	—	1
33. Tuberculosis of the intestines or peritoneum ...	—	20	12	20	—	6	7
34. Tuberculosis of the vertebral column ...	4	20	4	24	—	35	14

RETURN D—*cont.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUL-PATIENTS	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
I.—*Epidemic, endemic and infectious diseases* (contd.)							
35. Tuberculosis of bones and joints	7	16	4	23	1	30	3
36. Tuberculosis of other organs—							
(*a*) Skin or subcutaneous tissue (lupus) ...	—	—	—	—	—	1	—
(*b*) Bones	—	1	—	1	1	1	11
(*c*) Lymphatic system	4	26	1	30	2	10	10
(*d*) Genito-urinary ...	—	6	3	6	2	—	—
(*e*) Other organs ...	—	4	1	4	—	—	—
37. Tuberculosis disseminated—							
(*a*) Acute	1	2	1	3	—	—	—
(*b*) Chronic	—	1	—	1	—	1	—
38. Syphilis—							
(*a*) Primary	1	19	1	20	1	85	19
(*b*) Secondary... ...	5	18	1	24	1	78	32
(*c*) Tertiary	8	53	19	60	7	258	181
(*d*) Hereditary ...	—	10	6	10	—	16	10
(*e*) Period not indicated	—	12	1	12	1	44	21
39. Soft Chancre	6	72	—	78	1	218	14
40. A.—Gonorrhœa and its complications ...	12	377	3	389	11	3,562	477
B.—Gonorrhœal ophthalmia	1	49	—	50	2	88	66
C.—Gonorrhœal arthritis	2	51	—	53	1	199	49
D.—Granuloma venereum	—	4	—	4	1	4	3
41. Septicæmia	—	37	27	37	1	6	3
42. Other infectious diseases	—	2	—	2	—	4	2
II.—*General diseases not mentioned above.*							
43. Cancer or other malignang tumours of the buccal cavity ...	—	5	1	5	—	3	3
44. Cancer or other malignant tumours of the stomach or liver ...	—	8	3	8	—	4	2
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum	1	4	1	5	—	8	3
46. Cancer or other malignant tumours of the female genital organs	—	7	1	7	—	—	19
47. Cancer or other malignant tumours of the breast	—	3	—	3	—	—	6
48. Cancer or other malignant tumours of the skin	—	6	1	6	1	12	5
49. Cancer or other malignant tumours of organs not specified	2	31	12	33	—	38	12
50. Tumours non-malignant	1	103	5	104	5	300	124
51. Acute rheumatism ...	—	14	—	14	—	14	15
52. Chronic rheumatism ...	4	88	2	92	4	5,006	2,902
53. Scurvy (including Barlow's disease) ...	—	1	1	1	—	14	8
54. Pellagra	—	3	—	3	1	10	4
55. A.—Beri-beri	—	9	—	9	1	2	1
B.—Avitaminosis ...	3	31	2	34	2	85	79
56. Rickets	—	2	—	2	—	5	5
57. Diabetes (not including insipidus)	1	24	3	25	1	13	13
58. Anæmia—							
(*a*) Pernicious... ...	—	6	1	6	—	6	4
(*b*) Other anæmias and chlorosis	7	107	30	114	4	413	442

RETURN D—*cont.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
II.—*General diseases not mentioned above* (contd)							
59. Diseases of the pituitary body	1	—	—	1	—	2	—
60. Diseases of the thyroid gland—							
(*a*) Exophthalmic goitre	—	5	—	5	1	6	10
(*b*) Other diseases of the thyroid gland, Mysœdema ...	—	4	—	4	—	15	44
61. Diseases of the parathyroid glands ...	—	2	—	2	—	1	—
62. Diseases of the thymus	—	—	—	—	—	—	—
63. Diseases of the suprarenal glands	—	—	—	—	—	—	—
64. Disease of the spleen ...	—	7	1	7	—	85	59
65. Leukæmia—							
(*a*) Leukæmia... ...	—	5	3	5	—	7	2
(*b*) Hodgkin s disease	—	6	1	6	1	9	—
66. Alcoholism	—	11	—	11	—	3	—
67. Chronic poisoning by mineral substances (lead, mercury, etc.) ...	—	—	—	—	—	3	—
68. Chronic poisoning by organic substances (morphia, cocaine,etc.)	—	—	—	—	—	—	—
69. Other general diseases—							
(*a*) Auto-intoxication	—	2	—	2	—	—	2
(*b*) Purpura Hæmorrhagica	—	—	—	—	—	—	—
(*c*) Hæmophilia ...	—	—	—	—	—	—	—
(*d*) Diabetes insipidus	—	—	—	—	—	—	—
III.—*Affections of the nervous system and organs of the senses.*							
70. Encephalitis (not including encephalitis lethargica)	—	9	3	9	—	3	2
71. Meningitis (not including tuberculous meningitis or cerebrospinal meningitis)	—	38	29	38	2	9	5
72. Locomotor ataxia ...	—	1	1	1	—	3	1
73. Other affections of the spinal cord	—	23	—	23	1	26	4
74. Apoplexy—							
(*a*) Hæmorrhage ...	—	22	17	22	—	14	7
(*b*) Embolism ...	—	3	2	3	—	2	1
(*c*) Thrombosis ...	—	5	1	5	—	11	3
75. Paralysis—							
(*a*) Hemiplegia ...	7	69	10	76	5	81	32
(*b*) Other paralyses ...	9	66	12	75	6	129	55
76. General paralysis of the insane	1	6	—	7	—	3	3
77. Other forms of mental alienation	394	145	5	539	418	37	10
78. Epilepsy	19	39	7	58	17	110	65
79. Eclampsia, convulsions non-puerperal) 5 years or over	—	6	1	6	—	6	8
80. Infantile convulsions ...	—	15	7	15	2	41	40
81. Chorea	—	—	—	—	—	1	3
82. A.—Hysteria	—	16	—	16	—	11	10
B.—Neuritis	1	22	—	23	1	128	84
C.—Neurasthenia ...	—	15	—	15	—	85	37
83. Cerebral softening ...	—	7	4	7	1	3	1
84. Other affections of the nervous system, such as paralysis agitans ...	2	17	2	19	1	94	28

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
III.—*Affections of the nervous system and organs of the senses.* (contd.)							
85. Affections of the organs of vision—							
(*a*) Diseases of the eye	3	70	—	73	8	389	231
(*b*) Conjunctivitis ...	9	278	—	287	11	3,897	2,880
(*c*) Trachoma ...	—	5	—	5	—	26	21
(*d*) Tumours of the eye	—	21	—	21	1	8	7
(*e*) Other affections of the eye	7	433	—	440	18	1,406	803
86. Affections of the ear or mastoid sinus ...	1	85	—	86	3	2,072	1,287
IV.—*Affections of the circulatory system.*							
87. Pericarditis	—	8	4	8	—	22	20
88. Acute endocarditis or myocarditis	2	12	6	14	—	12	1
89. Angina pectoris ...	—	3	—	3	—	6	1
90. Other diseases of the heart	—	13	3	13	—	10	8
A.—Vavular	—	4	1	4	—	13	2
(*a*) Mitral	1	29	4	30	1	73	31
(*b*) Aortic	1	18	1	19	—	35	14
(*c*) Tricuspid	—	—	—	—	—	—	1
(*d*) Pulmonary ...	—	—	—	—	—	—	—
B.—Myocarditis ...	5	125	55	130	9	144	107
91. Diseases of the arteries—							
(*a*) Aneurism	1	15	8	16	1	10	4
(*b*) Arterio-sclerosis ...	—	2	—	2	—	19	10
(*c*) Other diseases ...	—	6	2	6	—	21	13
92. Embolism or thrombosis non-cerebral	—	6	2	6	—	1	—
93. Diseases of the veins—							
(*a*) Hæmorrhoids ...	7	72	2	79	6	307	105
(*b*) Varicose veins ...	—	7	1	7	—	21	6
(*c*) Phlebitis	—	10	1	10	1	10	4
94. Diseases of the lymphatic system—							
(*a*) Lymphangitis ...	—	16	1	16	—	124	33
(*b*) Lymphadenitis, bubo (non-specific)	12	207	—	219	13	490	116
95. Hæmorrhage of undetermined cause	—	12	—	12	2	19	4
96. Other affections of the circulatory system ...	2	14	2	16	4	19	5
V.—*Affections of the respiratory system.*							
97. Diseases of the nasal passages—							
(*a*) Adenoids	—	7	—	7	—	16	6
(*b*) Polypus	—	4	—	4	—	13	9
(*c*) Rhinitis	—	4	—	4	1	124	64
(*d*) Coryza	—	53	—	53	2	2,209	1,017
(*e*) Ill-defined ...	—	10	—	10	—	51	33
98. Affections of the larynx—							
(*a*) Laryngitis... ...	—	21	—	21	2	115	65
99. Bronchitis—							
(*a*) Acute	6	211	7	217	13	4,758	2,961
(*b*) Chronic	3	93	9	96	3	2,232	1,491
100. Broncho-pneumonia ...	3	197	77	200	8	200	151
101. Pneumonia—							
(*a*) Lobar	17	444	143	461	15	210	82
(*b*) Unclassified ...	6	57	16	63	3	156	63
102. Pleurisy, empyema ...	5	122	9	127	8	293	128
103. Congestion of the lungs	1	8	2	9	1	5	2
104. Gangrene of the lungs ...	—	3	—	3	—	7	3

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
V.—*Affections of the respiratory system* (contd.)							
105. Asthma	1	58	2	59	2	175	85
106. Pulmonary emphysema	—	3	1	3	—	5	1
107. Other affections of the lungs	—	3	1	3	—	1	—
(*a*) Pulmonary spirochætosis	—	1	—	1	—	1	1
VI.—*Diseases of the digestive system.*							
108. A.—Diseases of teeth or gums	—	3	—	3	—	103	33
Caries, pyorrhœa, etc.	2	110	5	112	—	2,209	1,384
B.—Other affections of the mouth ...	—	1	—	1	—	4	1
(*a*) Stomatitis... ...	3	56	7	59	1	752	609
(*b*) Glossitis, etc. ...	4	27	3	31	—	155	187
109. Affections of the pharynx or tonsils—							
(*a*) Tonsillitis ...	—	106	1	106	3	477	232
(*b*) Pharyngitis ...	—	25	—	25	—	475	242
110. Affections of the œsophagus	—	5	—	5	—	6	1
111. A.—Ulcer of the stomach	—	6	—	6	—	4	2
B.—Ulcer of the duodenum	—	4	2	4	1	3	2
112. Other affections of the stomach—							
(*a*) Gastritis	—	50	2	50	—	309	170
(*b*) Dyspepsia, etc. ...	1	31	—	32	—	1,481	1,078
113 and 114. Diarrhœa and enteritis—							
A.—Under two years ...	4	89	23	93	3	1,215	1,008
B.—Two years and over	5	317	32	322	4	1,543	863
(*a*) Colitis	1	52	3	53	2	320	176
(*b*) Ulceration ...	—	—	—	—	—	1	—
(*c*) Other diseases ...	—	12	—	12	—	64	48
114*a*. Sprue	—	—	—	—	—	—	—
115. Ankylostomiasis ...	4	537	12	541	4	856	469
116. Diseases due to intestinal parasites—							
(*a*) Cestoda (tænia) ...	1	114	2	115	4	1,818	678
(*b*) Tremotoda (flukes)	—	1	—	1	—	2	—
(*c*) Nematoda (other than ankylostoma)— ...	—	1	—	1	—	3	—
(i) Ascaris ...	2	98	3	100	6	887	821
(ii) Trichocephalus dispar ...	—	—	—	—	—	1	2
(iii) Trichina ...	—	2	—	2	—	1	1
(iv) Dracunculus	8	179	—	187	4	607	281
(v) Strongylus ...	—	1	—	1	—	7	6
(vi) Oxyuris ...	—	7	—	7	—	46	35
(*d*) Coccidia	—	—	—	—	—	—	—
(*e*) Other parasites ...	—	2	—	2	—	16	12
(*f*) Unclassified ...	—	20	3	20	—	49	16
117. Appendicitis	2	38	3	40	—	35	11
118. Hernia	14	304	26	318	7	525	36
119. A.—Affections of the anus, fistula, etc.	6	87	2	93	8	213	112
B.—Other affections of the intestines ...	1	22	4	23	—	281	58
(*a*) Enteroptosis ...	—	1	1	1	—	2	5
(*b*) Constipation ...	5	168	—	173	2	9,156	3,415
120. Acute yellow atrophy of the liver	—	—	—	—	—	—	—
121. Hydatid of the liver ...	—	1	—	1	1	—	—
122. Cirrhosis of the liver—							
(*a*) Alcoholic	—	1	—	1	—	2	1
(*b*) Other forms ...	1	17	12	18	—	18	5

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
VI.—*Diseases of the digestive system* (contd.)							
123. Biliary calculus ...	—	1	—	1	—	—	—
124. Other affections of the liver—							
(*a*) Abscess	—	23	4	23	1	11	2
(*b*) Hepatitis	2	73	8	75	3	94	28
(*c*) Cholecystitis ...	—	8	1	8	1	6	1
(*d*) Jaundice	1	70	3	71	1	121	37
125. Diseases of the pancreas	—	2	2	2	—	2	1
126. Peritonitis (of unknown cause)	—	38	20	38	—	7	6
127. Other affections of the digestive system ...	—	35	16	35	2	46	31
VII.—*Diseases of the genito-urinary system* (*non-venereal*).							
128. Acute nephritis	4	72	16	76	3	110	65
129. Chronic nephritis ...	7	135	41	142	17	107	58
130. A.—Chyluria	—	1	—	1	—	6	1
B.—Schistosomiasis ...	2	197	2	199	4	584	129
131. Other affections of the kidneys—							
(*a*) Pyelitis, etc. ...	1	46	7	47	2	37	18
132. Urinary calculus ...	—	8	—	8	1	4	4
133. Diseases of the bladder—	—	1	—	1	—	—	1
(*a*) Cystitis	11	111	8	122	4	416	329
134. Diseases of the urethra—							
(*a*) Stricture	23	208	10	231	12	356	4
(*b*) Other	10	112	2	122	10	112	14
135. Diseases of the prostate—							
(*a*) Hypertrophy ...	—	3	—	3	—	2	—
(*b*) Prostatitis ...	3	19	—	22	1	97	—
136. Diseases (non-venereal) of the genital organs of man—	—	1	—	1	—	—	—
(*a*) Epididymitis ...	4	50	—	54	2	155	—
(*b*) Orchitis	6	94	2	100	4	237	—
(*c*) Hydrocele ...	10	69	—	79	6	273	—
(*d*) Ulcer of penis ...	11	95	—	106	4	378	—
(*e*) Phimosis and paraphimosis ...	5	177	—	182	3	265	—
137. Cysts or other non-malignant tumours of the ovaries	—	13	2	13	1	—	11
138. Salpingitis	—	64	—	64	2	—	159
(*a*) Abscess of the pelvis	—	10	—	10	2	—	73
139. Uterine tumours (non-malignant)	1	43	3	44	2	—	93
140. Uterine hæmorrhage (non-puerperal) ...	—	14	1	14	—	—	75
141. A.—Metritis	—	59	—	59	1	—	487
B.—Other affections of the female genital organs— ...	3	66	—	69	1	—	197
(*a*) Displacements of uterus	1	14	—	15	—	—	139
(*b*) Amenorrhœa ...	—	13	—	13	—	—	389
(*c*) Dysmenorrhœa ...	1	25	—	26	1	—	1,017
(*d*) Leucorrhœa ...	—	6	—	6	—	—	278
142. Diseases of the breast (non-puerperal)—							51
(*a*) Mastitis	1	19	—	20	—	10	148
(*b*) Abscess of breast...	—	8	—	8	—	3	51

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
VIII.—*Puerperal State.*							
143. A.—Normal labour ...	23	663	2	686	10	—	461
B.—Accidents of pregnancy—							
(*a*) Abortion	3	221	8	224	1	—	238
(*b*) Ectopic gestation	3	10	—	13	1	—	7
(*c*) Other accidents of pregnancy ...	6	151	19	157	5	—	224
C.—Maternal welfare (antenatal) ...	13	671	9	684	22	—	1,283
D.—Postnatal examinations—mothers and infant	4	94	3	98	3	450	16,518
144. Puerperal hæmorrhage	—	13	2	13	—	—	12
145. Other accidents of parturition	7	330	72	337	7	—	27
146. Puerperal septicæmia ...	—	36	13	36	1	—	31
147. Phlegmasia dolens ...	—	—	—	—	—	—	1
148. Puerperal eclampsia ...	1	18	7	19	1	—	—
149. Sequelæ of labour ...	—	18	2	18	1	—	19
150. Puerperal affections of the breast	1	7	—	8	—	—	15
IX.—*Affections of the skin and cellular tissues.*							
151. Gangrene	5	25	10	30	3	23	8
152. Boil—	—	114	—	114	4	986	347
(*a*) Carbuncle ...	—	30	—	30	2	209	52
153. Abscess—	22	472	8	494	25	777	283
(*a*) Whitlow	6	98	—	104	2	533	180
(*b*) Cellulitis	20	407	21	427	19	873	276
154. A.—Tinea	—	10	—	10	—	1,476	893
B.—Scabies	—	25	—	25	—	4,179	2,809
155. Other diseases of the skin	—	48	—	48	1	1,146	816
(*a*) Erythema ...	—	3	—	3	—	237	224
(*b*) Urticaria	—	23	—	23	1	401	224
(*c*) Eczema	2	41	—	43	3	1,133	693
(*d*) Herpes	—	15	—	15	1	144	44
(*e*) Psoriasis	—	1	—	1	—	45	24
(*f*) Elephantiasis ...	14	95	2	109	7	204	54
(*g*) Myiasis	2	1	1	3	—	12	9
(*h*) Chiggers	—	3	—	3	—	7	3
(*i*) Cutaneous Eishmaniasis	—	—	—	—	—	—	—
(*j*) Ulcers	114	1,275	29	1,389	120	9,842	5,403
X.—*Diseases of bones and organs of locomotion (other than tuberculous).*							
156. Diseases of bones—							
(*a*) Osteitis	5	56	1	61	4	639	511
(*b*) Osteo-myelitis ...	13	96	4	109	13	118	72
157. Diseases of joints—							
(*a*) Arthritis	15	180	5	195	11	1,711	880
(*b*) Synovitis	5	151	—	156	9	454	138
158. Other diseases of bones or organs of locomotion	2	36	—	38	6	234	86
(*a*) Fibrositis	—	71	—	71	2	1,937	697
XI.—*Malformations.*							
159. Malformations—							
(*a*) Hydrocephalus ...	—	2	—	2	—	7	4
(*b*) Hypospadias ...	—	—	—	—	—	—	—
(*c*) Spina bifida, etc.	—	11	1	11	—	23	17
XII.—*Diseases of infancy.*							
160. Congenital debility ...	—	18	6	18	—	179	151
161. Premature birth ...	2	106	47	108	2	114	124

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
XII—Diseases of Infancy—contd.							
162. Other affections of infancy	14	196	48	210	9	461	360
163. Infant neglect (infants of three months or over)	—	2	1	2	—	21	14
(*a*) New born infants	23	548	46	571	6	357	368
XIII.—*Affections of old age.*							
164. Senility—	9	14	2	23	12	69	93
Senile dementia ...	—	6	3	6	—	11	10
XIV.—*Affections produced by external causes.*							
165. Suicide by poisoning ...	—	4	4	4	—	1	—
166. Corrosive poisoning (intentional)	—	4	1	4	—	—	—
167. Suicide by gas poisoning	—	—	—	—	—	—	—
168. Suicide by hanging or strangulation ...	—	1	1	1	—	—	—
169. Suicide by drowning ...	—	—	—	—	—	—	—
170. Suicide by firearms ...	—	—	—	—	—	—	—
171. Suicide by cutting or stabbing instruments	—	3	3	3	—	2	—
172. Suicide by jumping from a height	—	—	—	—	—	—	—
173. Suicide by crushing ...	—	1	1	1	—	—	—
174. Other suicides	—	1	1	1	—	—	—
(*a*) Attempted suicide	2	22	—	24	—	4	1
175. Food poisoning— ...	—	5	—	5	—	13	5
(*a*) Botulism	—	—	—	—	—	—	—
176. Attacks of poisonous animals—							
(*a*) Snake-bite ...	—	55	3	55	1	74	13
(*b*) Insect-bite or sting	—	18	1	18	—	136	46
177. Other accidental poisonings	—	23	2	23	1	13	5
178. Burns (by fire)	10	110	21	120	15	272	170
179. Burns (other than by fire)	3	58	8	61	4	109	56
180. Suffocation (accidental)	—	3	—	3	—	—	1
181. Poisoning by gas (accidental)	—	—	—	—	—	—	—
182. Drowning (accidental) ...	—	—	—	—	—	—	—
183. Wounds (by firearms, war excepted)	4	108	16	112	6	45	257
184. Wounds (by cutting or stabbing instruments)	44	746	27	790	32	3,766	577
185. Wounds (by fall) ...	13	303	9	316	5	1,280	154
186. Wounds (in mines or quarries)	4	146	4	150	4	2,385	—
187. Wounds (by machinery)	2	44	1	46	1	616	24
188. Wounds (crushing, e.g. railway accidents, etc.)	10	264	15	274	16	471	94
189. Injuries inflicted by animals, bites, kicks, etc.	3	66	1	69	1	424	185
190. Wounds inflicted on active service ...	—	—	—	—	—	—	—
191. Executions of civilians by belligerents	—	—	—	—	—	—	—
192. A.—Over-fatigue ...	—	1	—	1	—	—	—
B.—Hunger or thirst ...	—	18	11	18	5	9	2
193. Exposure to cold, frost bite, etc.	—	—	—	—	—	10	10
194. Exposure to heat—							
(*a*) Heatstroke ...	—	3	—	3	—	—	1
(*b*) Sunstroke ...	—	—	—	—	—	6	—
195. Lighting stroke	—	2	—	2	—	—	—
196. Electric shock	—	—	—	—	—	1	—
197. Murder by firearms ...	—	—	—	—	—	—	—

RETURN D—*contd.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1936.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
XIV.—Affections produced by external causes—contd.							
198. Murder by cutting or stabbing instruments	—	1	1	1	—	—	—
199. Murder by other means	—	—	—	—	—	—	—
200. Infanticide (murder of an infant under one year)	—	—	—	—	—	—	—
201. A.—Dislocation ...	2	60	—	62	2	78	24
B.—Sprain	2	98	—	100	2	621	86
C.—Fracture	48	443	43	491	47	313	104
202. Other external injuries	16	412	5	428	18	2,052	429
203. Deaths by violence of unknown cause ...	—	—	—	—	—	—	—
XV.—*Ill-defined diseases.*							
204 Sudden death (cause unknown	—	—	—	—	—	—	—
205. A.—Diseases not already specified or ill-defined—							
(*a*) Ascites	2	61	16	63	6	93	37
(*b*) Œdema	2	22	1	24	—	81	37
(*c*) Asthenia	2	106	20	108	3	578	380
(*d*) Shock	—	32	8	32	—	11	3
(*e*) Hyperpyrexia ...	—	6	—	6	—	13	2
(*f*) Neuralgia and headache undiagnosed) ...	—	32	—	32	—	762	416
(*g*) Other diseases ...	1	129	19	130	6	618	318
B.—Malingering ...	—	30	—	30	—	76	5
C.—Observation cases ...	18	272	5	290	12	493	274
D.—Pyrexia of uncertain origin	7	144	5	151	6	408	161
XVI.—*Diseases, the total of which have not caused ten deaths.*	—	20	—	20	1	37	24
Total	2,165	24,916	2,082	27,081	2,049	165,940	118,190

Major operations 1,314

Minor operations 4,532

RETURN E.

	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st Dec., 1935.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st Dec., 1936.	Male.	Female.
		Admissions.	Deaths.				
Medical	1,991	23,275	1,865	25,266	1,890	151,566	91,953
Health Branch :—							
Welfare centres	61	1,238	177	1,299	50	14,355	26,233
Contagious diseases hospitals	113	403	40	516	109	19	4
	2,165	24,916	2,082	27,081	2,049	165,940	118,190

RETURN F.

Analysis of more important Conditions dealt with in the Out-Patients Department of the Child Welfare Centres during 1936.

Diseases.	Male.	Female.	Total.	Ratio to diseases due to all causes.
Malaria	3,713	4,230	7,943	19·57
Yaws	3,302	2,520	5,822	14·34
Diseases of respiratory system	1,608	1,665	3,273	8·06
Parasitic skin diseases	839	899	1,738	4·28
Constipation	470	553	1,023	2·52
Diarrhœa and enteritis	596	609	1,205	2·97
Diseases of teeth, gums and mouth	435	568	1,003	2·47
Diseases of infancy	955	891	1,846	4·55
Intestinal parasites	227	272	499	1·23
Diseases of the eye	257	301	558	1·37
Whooping cough	222	239	461	1·13
Ulcers	137	179	316	0·78
Dysentery	115	105	220	0·54
Injuries (external causes)	124	112	236	0·58
Diseases of lymphatic system	21	24	45	0·11
Measles	103	77	180	0·44
Other conditions	1,231	12,989	14,220	35·03
Total	14,355	26,233	40,588	—

APPENDICES.

APPENDIX I.

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

COLONY.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
EASTERN PROVINCE.													
Accra	1	1	15	3	15	3	179+7 cots	49+11 cots	170+7 cots	49+11 cots	2	5 (M.Os.)	
Accra, Cantonments	—	1	—	—	—	—	6	—	6	—	1	1 (M.O.)	
Accra, Maternity	—	1	—	—	—	—	—	42+29 cots	—	32+20 cots	—	2 (W.M.Os.)	
Accra, Princess Marie Louise Hospital	—	1	—	—	—	—	—	3+27 cots	—	3+27 cots	1	1 (W.M.O.)	A childrens hospital and welfare centre.
Accra, Christiansborg	—	—	—	—	—	—	—	—	—	—	1	—	Welfare centre—closed.
Ada	—	1	—	—	—	—	7	4	7	4	1	1 (M.O.)	
Akuse	—	1	—	—	—	—	12	9	12	9	1	1 (M.O.)	
Keta	—	1	—	—	—	—	22	10	22	10	1	1 (M.O.)	
Kibi	—	1	—	—	—	—	16	4	16	4	1	1 (M.O.)	
Koforidua	—	1	—	—	—	—	19	6	12	6	1	1 (M.O.	
Koforidua	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Welfare centre.
Mpraeso	—	1	—	—	—	—	8	6	8	6	1	1 (M.O.)	
Nsawam	—	1	—	—	—	—	9	3	9	3	1	1 (M.O.)	
Total	1	11	15	3	15	3	278+7	136+67	262+7	126+58	13	17	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

COLONY.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
CENTRAL PROVINCE.													
Cape Coast	—	1	—	—	—	—	19	18	19	19	1	1 (M.O.)	
Cape Coast	—	—	—	—	—	—	—	—	—	4+6 cots	1	1 Red Cross sister.	Red Cross welfare centre.
Dunkwa	—	1	—	—	—	—	18	5	21	4	1	1 (M.O.)	
Elmina	—	—	—	—	—	—	—	—	—	—	1	—	Visited from Cape Coast.
Oda	—	1	—	—	—	—	14	4	13	4	1	1 (M.O.)	
Saltpond	—	1	—	—	—	—	8	6	8	8	1	1 (M.O.)	
Winneba	1	1	4	1	7	1	28	22+6 cots	32	28+6 cots	1	1 (M.O.)	
Total	1	5	4	1	7	1	87	55+6	93	63+12	7	6	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND MEDICAL BRANCH.

COLONY.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
WESTERN PROVINCE.													
Axim	1	1	3	—	6	—	12	4	12	4	1	1 (M.O.)	
Chama	—	—	—	—	—	—	—	—	—	—	—	1 Red Cross sister.	Red Cross welfare centre.
Sekondi	—	1	—	—	—	—	47+2 cots	9+5 cots	47+2 cots	9+5 cots	1	2 (M.Os.)	
Sekondi	—	—	—	—	—	—	—	—	—	—	1	1 Red Cross sister.	Red Cross welfare centre.
Takoradi	1	—	20	4	20	4	—	—	—	—	1	1 (M.O.)	
Tarkwa	—	1	—	—	—	—	22	10	26	6	1	1 (M.O.)	
Wiawso	—	1	—	—	—	—	6	2	8	4	1	—	Visited occasionally by M.O.
Total	2	4	23	4	26	4	87+2	25+5	93+2	23+5	6	7	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND MEDICAL BRANCH.

ASHANTI.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Bekwai	—	1	—	—	—	—	6	4	6	4	1	1 (M.O.)	
Kumasi	1	1	10	2	10	2	111	26+5 cots	111	26+5 cots	1	3 (M.O.s)	
Kumasi	—	1	—	—	—	—	—	11+25 cots	—	11+25 cots	1	1 (W.M.O.)	Welfare centre.
Sunyani	—	1	—	—	—	—	12	4	12	4	1	1 (M.O.)	
Total	1	4	10	2	10	2	129	45+30	129	45+30	4	6	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

NORTHERN TERRITORIES.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Bawku	—	1	—	—	—	—	6	—	6	—	1	1 (M.O.)	
Lawra	—	1	—	—	—	—	13	4	13	4	1	1 (M.O.)	
Navrongo	—	1	—	—	—	—	13	3	13	3	1	1 (M.O.)	
Salaga	—	1	—	—	—	—	8	2	8	3	1	—	Visited from Tamale.
Tamale	1	1	4	2	6	2	41	5+3 cots	42	6+3 cots	1	2 (M.O.s)	
Wa	—	1	—	—	—	—	13	4	13	5	1	1 (M.O.)	
Zuarungu	—	—	—	—	—	—	—	—	—	—	1	—	Visited from Navrongo.
Gambaga	—	—	—	—	—	—	—	—	—	—	1	—	Visited from Bawku.
Total	1	6	4	2	6	2	94	18+3	95	21+3	8	6	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

BRITISH SPHERE OF TOGOLAND.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Ho	—	1	—	—	—	—	12	5	14	5	1	1 (M.O.)	
Kete Krachi	—	—	—	—	—	—	—	—	—	—	1	—	Visited occasionally by M.O.
Yendi	—	1	—	—	—	—	12	12	12	12	1	1 (M.O.)	
Total	—	2	—	—	—	—	24	17	26	17	3	2	
Grand Total	6	32	56	12	64	12	699+9 cots	296+111 cots	698+9 cots	295+108 cots	41	44	

APPENDIX I—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, HEALTH BRANCH.

COLONY. CONTAGIOUS DISEASES HOSPITAL.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (medical officers and women medical officers).	REMARKS.
	Euro-pean.	Afri-can.	Total beds at present.		Number of beds possible.		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Accra (Labadi)	1	1	—	—	4	—	36	26	59	82	—	1 (M.O.H.)	Visiting.
Ada	—	1	—	—	—	—	—	—	6	4	—	1 (M.O.)	Visiting.
Cape Coast	—	1	—	—	—	—	5	4	13	13	—	1 (M.O.H.)	Visiting.
Keta	—	1	—	—	—	—	—	—	4	2	—	1 (M.O.)	Visiting.
Kumasi	—	1	—	—	—	—	18	6	60	8	—	1 (M.O.H.)	Visiting.
Saltpond	—	1	—	—	—	—	2	—	4	—	—	1 (M.O.)	Visiting.
Sekondi	—	1	—	—	—	—	24	—	24	24	—	1 (M.O.H.)	Visiting.
Tarkwa	—	1	—	—	—	—	—	—	6	—	—	1 (M.O.H.)	Visiting.
Winneba	—	1	—	—	—	—	—	—	2	2	—	1 (M.O.)	Visiting.
Total	1	9	—	—	4	—	85	36	178	135	—	9	

APPENDIX II.—CASES OF INTEREST.

(*a*) **A Case of Yellow Fever in a very Young Child.**

The mother stated she only moved between the village of Prepreawase and Nsawam for marketing and had been in no other district for some considerable time. The child had been ill for four days prior to admission to hospital. It had " fever " which the mother considered was the result of teething.

On the first day of the fever and also on the second day the child vomited, one each day ; the vomit, she said, was white, and was practically pure milk. The mother said she did not notice that the child's eyes were yellow until the child was examined at hospital.

The bowels were apparently normal.

On the 30th of March, 1936, a male child named Soja—one year old—was admitted to hospital. Temperature 102°, pulse 128, respirations 32. It was suckling the mother's breast with avidity and did not appear to be profoundly ill. The eyes were deeply jaundiced and the skin appeared jaundiced although this was difficult to estimate in an African child. The spleen was enlarged to about 2″ below the costal margin. The urine was highly coloured and on boiling became almost solid with albumen.

A blood smear-showed no malarial parasites but as the stain had only been freshly prepared the examination was inconclusive. One smear was sent for examination to the Research Institute, Accra.

The case was seen about 11.30 a.m. by Dr. W. H. Howells and Dr. R. D. Reid. Their general impression was that the case had more the features of a profound malarial infection than those of yellow fever. The history—duration four days ; no black vomit ; depth of jaundice ; age of child, one year ;—all pointed to a profound infection with malaria with a possibility of a nephritis and heavy albuminuria. The skin of the shins and dorsum of the feet give the impression of œdema but there was no actual pitting on pressure. Quinine 4 grs. was administered intramuscularly.

The temperature rose to 104° in the evening, pulse 132, respirations 34.

On the 31st March, 1936, the temperature was 101° in the morning, pulse 120, respirations 32. The urine was still loaded with albumen. The child's general condition was very similar to that of the previous day. At about 2.30 p.m. the child was rapidly sinking with sighing respirations and unable to suckle.

Natural milk was administered in teaspoonful doses but the child was able to swallow only with difficulty. At about 3.30 p.m. the child expired.

POSTMORTEM.

A post-mortem examination with dissection was carried out at about 7 p.m. Subcutaneous fat was jaundiced. No hæmorrhages were visible in the gums or eyes. The liver was pale and mottled and had the appearance of being " fatty." The gall-bladder was distended with bile ; the lungs were not examined. The spleen was enlarged but not particularly soft. The stomach contained " coffee grounds " and some undigested milk. The cardiac end of the stomach was injected but not to any great extent. The kidneys were pale and flabby, the capsules stripping easily. The intestinal tract showed nothing of any note.

Sections of the liver, spleen and kidneys and smears of the spleen and brain were sent to the Medical Research Institute.

PATHOLOGIST'S REPORT.

Liver.—Marked fatty degeneration of the peripheral cells. Necrosis of midzone. Marked councilman lesion in the necrotic area. Hypertrophied nuclei and a few specific intranuclear inclusions seen.

Spleen.—Congestion ; otherwise little abnormal.

Kidney.—Marked cloudy swelling of the tubules. Some granular casts. Fat present in periphery of cells of tubules.

No lime casts seen.

Smears.—Brain } no parasites (malarial).
Spleen }

Diagnosis.—Yellow fever.

G. W. VAUGHAN,
Medical Officer.

(*b*) A Case of Tropical Typhus.

Name of patient	A.W.S.	No. 320.
Occupation	Trader	Age : 34.
Admitted	1–11–36	Discharged : 16–11–36.
Disease	Typhus fever	Result : Recovery.
Station	Mpraeso.	

Clinical Abstract of Case.

History.—Came from Konongo. Fifteen days before admission, felt cold. Next day felt weak and feverish and had to give up work. Frontal headache severe. No pains elsewhere. No vomiting. Constipated. Took castor oil, which purged him violently, since when he has been constipated. About three days from onset he applied native medicine to skin ; this was followed by an eruption all over of raised spots which became blebs and then peeled ; this lasted until shortly before admission—slept and ate fairly well throughout.

Has had gonorrhœa about four months. Denies that others of family have been ill.

Condition on admission.—Looks ill—eyes sunken ; skin hot and dry. *Eyes :* no jaundice. *Tongue :* rather dry and furred. *Glands :* palpable. *Chest :* nil. *Heart :* nil.

Abdomen.—Spleen just palpable. No tenderness or resistence anywhere (did not feel like a typhoid).

Blood.—No parasites. *Urine :* trace of albumen. *Stool :* ascaris.

Laboratory Report.

Blood.—Widal 6–11–36. Agglutinates typhoid H 1–25. No agglutination typhoid 0. Para A B C group salmonella.

Weil Felix—Agglutinates proteus 0 x 19, 1 1280.

Widal 7–11–36—Agglutinates typhoid H 1–40.

Weil Felix—Agglutinates proteus 0 x 19–1–2560.

This appears to have been a case of tropical typhus.

G. L. ALEXANDER,
Medical Officer.

APPENDIX III.

(Published in " Leprosy Review " Vol. VII, No. 4—*October,* 1936.)

LEPROSY IN THE GOLD COAST.

A short Report on Anti-Leprosy Work in the Gold Coast with suggestions for its further development.

I.—INTRODUCTORY.

The British Empire Leprosy Relief Association suggested that their Medical Secretary should visit the Gold Coast, and, after studying the leprosy problem there, make suggestions for its further development of anti-leprosy work. This suggestion was welcomed by Sir Thomas Stanton and by the Honourable the Director of Medical Services. I had an opportunity of discussing my proposed visit with the Director of Medical Services, who was then home on leave, before leaving London. The Acting Director of Medical Services kindly prepared an itinerary and made all arrangements for my tour.

Before visiting the Gold Coast I spent two months in Nigeria, seeing the anti-leprosy work which is being done there and preparing a report on this work with suggestions for a new scheme of development. My experience of anti-leprosy work has chiefly been in India, where conditions are in many respects different from those in West Africa. I was therefore glad to have an opportunity of studying the disease first in Nigeria, where within the last few years a number of large leper settlements have been formed under whole-time doctors, and a considerable effort is being made to deal with the problem from the public health point of view. I have supplied a copy of my Niegria report to the Director of Medical Services and shall refer to it in the present report, mentioning it as " N.R." and referring to its sections and paragraphs as in the report.

II.—NOTES ON THE LEPROSY INSTITUTIONS VISITED.

Accra Leper Camp.—Visited on 1st June, 1936, in company with the Acting Director of Medical Services, the Senior Health Officer and the Port Health Officer.

It is situated beside the seashore about 1½ miles from the town. It consists of a central two-storied wooden building with an iron roof. The upper storey is at present used as a store, but is available for educated patients when necessary. The lower storey is used as a dispensary and treatment room and provides accommodation for the African Superintendent. The patients are accommodated in wooden huts with corrugated iron roofs, two being housed in each building. The huts are arranged in rows, the accommodation for the men being a short distance from that for the women. The camp was originally designed as an infectious diseases camp, but has been used as a leper camp since 1920.

I examined the patients as far as time permitted and classified them as follows :—

	Male.	*Female.*	*Total.*
N1.	1	1	2
N2.	2	3	5
N3.	6	5	11
C1.	3	1	4
C2.	10	9	19
C3.	12	8	20
?	2	—	2
Total	36	27	63

Thus 39, or 61·9 per cent, are highly infectious cases, and 11 or 17.4 per cent, are deformed and crippled.

I am informed that about one-third of the patients came from Accra and its neighbourhood, about one-third from other parts of the Gold Coast, and the remainder from French territory and other places outside the Gold Coast. The patients are given threepence to 4½ pence a day. The cost of maintenance of patients, drugs, etc., is between £360 and £400 a year. There is an African Caretaker on the spot and the Port Health Officer visits the camp and carries on treatment. Alepol is the drug chiefly used.

The soil and sanitation are unsuitable for development as a farm colony.

Ho Settlement.—I visited this on 2nd and 3rd June, 1936, in company with the Medical Officer of Ho, who in addition to his other duties gives part of his time to the superintendence of the settlement. The patients are lodged in parallel well-spaced rows of huts. The former thatched roofs have been replaced with corrugated iron since they were destroyed by fire last year. The buildings are in rows, on land sloping down to a small stream from which water is available, though insufficient in the dry weather. A well was built near this stream but has turned out unsatisfactory. The camp is not far from the town of Ho, and a proposal has been made to bring water in pipes from the water supply of the town.

There are about 28 acres of land at present, and a proposal has been made to extend the colony as an agricultural farm similar to those in Nigeria; but I understand that an excessive price is asked by the owners for the surrounding land. A grant of £1,900 a year is made by the Government for the maintenance of the colony.

Of the patients 264 were ranged up, grouped according to their villages, for my inspection. I divided them into various geographical groups and also classified them according to the type of disease, as seen in the following table :—

	Within the Ewe area about 40 by 60 miles in neighbourhood of Ho.	Other parts Gold Coast.	Liberia.	Nigeria.	French territory.	Total.
C1.	3	1	—	—	—	4
C2.	19	11	—	—	—	30
C3.	34	17	2	1	2	56
N1.	9	2	—	—	—	11
N2.	52	18	—	1	5	76
N3.	55	16	1	1	4	77
Disease arrested ...	4	—	—	—	3	7
Non-lepers	3	—	—	—	—	3
Total	179	65	3	3	14	264

I saw also one non-African case.

Thus about 68 per cent were from the neighbourhood of Ho and 25 per cent from more distant parts of the Gold Coast. Some 32·5 per cent may be counted as highly infectious cases, and about 37·6 per cent as hopeful cases, and about 30 per cent crippled cases.

The sanitary system is bucket latrines, which are attended to by non-lepers.

A certain amount of farming is done by the lepers, but only a limited amount of land is available for this purpose.

The leper colony at Itu, as shown in the Nigerian report, is conducted on an annual grant of about £2,600 but this includes the salaries of the Medical Officer and the Industrial Officer. So that Ho, with less than 300 patients, cost more than Itu with its 1,500 patients. As pointed out in the Nigerian report, a colony can be made largely self-supporting by farming and industries, and it is much more economical to have large settlements with whole-time workers than small settlements with part-time workers.

There are among others three great difficulties in the way of developing the Ho settlement into one like Itu and Usuakoli, viz., the difficulty in obtaining sufficient land, the great proportion of hopeless cases who have no interest in recovery, and the absence of whole-time European workers.

Yendi Leper Camp.—I visited this on 6th June, 1936, in company with the Medical Officer. The care of this camp is only one of his many duties. The present camp is in the close vicinity of the general hospital, but a new camp is in course of construction about one mile distant. The construction of the new huts has been carried out at a small cost with the aid of the lepers themselves. There were about 15 cases, of which some six appeared to be highly infectious cases. Most of the patients come from villages to the east, north-east and south-east, that is from East Dagomba. The patients are given a penny or penny half-penny a day. This they supplement as best they can by farming and in other ways, but the Medical Officer did not consider their diet as satisfactory.

Kumasi Leper Camp.—Visited on 7th June, 1936, in company with the Medical Officer of Health. There are 25 cases of leprosy. They are lodged in dormitories in wooden buildings with corrugated iron roofs lined with wood. They are supplied with food and they have facilities for a little farming in the neighbourhood of the camp. Of the 25, eight were highly infectious cases. They came from the following districts :—

Kumasi and neighbourhood	6
Ashanti (Adansi)	1
Lake Bosumtwi	3
Coast	2
Northern Territories	13

The patients appeared happy and contented. Treatment is given by the Medical Officer of Health.

Lake Bosumtwi.—As this is supposed to be a centre of leprosy, I visited it along with the Medical Officer, Bekwai, on 10th June, 1936. We went about fifteen miles from Bekwai to Morontus by motor, then about one and a half miles down to Apewu on the lake. We visited seven out of the 24 villages on the lake and found 20 cases of leprosy, viz.: —

Village.	Population 1931 census.	N1.	N2.	N3.	C1.	C2.	C3.	C2N3.	Total.
Apewu	231	—	—	4	—	—	—	—	4
Banso	331	—	3	2	—	—	—	1	6
Antasi	—	—	—	—	—	—	—	—	—
Wawasi	41	—	—	—	—	—	—	—	—
Dampe	429	—	—	3	—	—	—	—	3
Juaso	368	—	—	—	—	—	—	—	—
Ankasi	457	1	—	4	—	—	2	—	7
Total	—	1	3	13	—	—	2	1	20

Thus there were 20 cases in four out of seven villages visited, 13 of these being deformed cases in which the infection had almost or entirely died out.

At Banso the Chief said that there had been ten cases who attended a treatment centre at Kumasi. But they were all dead now but one. He, however, showed us six cases. None of these were infectious except the one survival of the clinic = C2N2 case.

At Juaso the chief said there had been ten cases, but they had all died or gone back to their own villages, because, on the advice of the doctor who had previously carried out a survey, the villagers had proposed to isolate them in huts outside the village of Juaso. In all the villages the people looked well nourished and the houses were of a good type and apparently not overcrowded. In only one case was a child living in the same room with an infectious case.

There is abundant fish in the lake, so that the people do not lack for proteins. There is cocoa-farming round the lake, and this should bring in comparative wealth to the villagers. The close proximity to the lake also helps to render the people cleaner than in other places. There is a certain amount of yaws, but not as bad (I am informed by the Medical Officer) as in other villages.

The disease of leprosy seems to have been associated with Lake Bosumtwi from ancient times ; but it would appear from our investigations and the type of case most prevalent, as far at least as the seven villages we visited are concerned, that leprosy is dying out now. Apparently people were sent from outside villages to live at the lake, possibly because it is considered sacred. In India lepers are found in large numbers round sacred shrines, because leprosy is supposed to be the result of former sins which must be exculpated by religious observances. Possibly lepers were sent to Lake Bosumtwi for a similar reason, or else in order to get rid of the danger of infection they were sent to this far-off wild place.

Possibly the introduction of cocoa-farming has changed the aspect of this region, bringing wealth and increase of population, where formerly there was only dense bush.

The lake is also apparently increasing in size as there are many old trees standing far out in the water, and the people of Dampe told us that their village was formerly situated far out in the present lake. The place is one of great interest and would repay further careful investigation.

III.—DISCUSSION.

Leprosy may be considered from four points of view, viz., the æsthetic, charitable, medical and public health. According to the first, deformed and disabled lepers are an eye-sore in the town, and a place of refuge is therefore created for them to which they can be removed. From the charitable point of view these victims are looked upon as unfortunates and charitably disposed people supply comforts in the form of food, treats, left-off clothing, etc. The medical standpoint is shown when lepers attend hospital and dispensary for treatment, either of the leprosy itself or of its complications and accompanying diseases. Attendance however tends to be irregular, and while a few receive benefit, the majority are but little improved. The public health point of view is that which endeavours to probe down into the causes of leprosy, to study it as it exists in the villages and to devise means which, however long they may take to bear fruit, will in the end deal effectively with the disease and bring about its control.

From the æsthetic and charitable points of view I consider that something is being accomplished in the Gold Coast. From the medical side very little is being done except by a few keen doctors who are distressed at the frequency of the disease and are seeking to do what little they can in addition to their many other pressing duties. From the public health standpoint something is being accomplished by the isolation of some 400 lepers, about one-third of which may be considered as highly infectious cases. But, in the absence of any clear indication of the actual incidence and distribution of leprosy in the country it is difficult to say to what extent the spread of the disease is likely to be limited by the partial removal of these cases from contact with the public.

IV.—SUGGESTIONS.

(1) *Need of a Survey.*—In Nigeria the number of lepers is estimated at 200,000 at least, making an incidence of 1 per cent on an average. In some places the incidence is much less than this, and in others very much higher.

So far no satisfactory estimate of the incidence of leprosy is available. The 1931 census report shows as much as 4 per cent in some villages ; but these figures are acknowledged by public health workers to be unreliable. Short surveys of very limited extent have been carried out by two medical officers in recent years ; but these were not extensive enough to give the necessary data for forming an effective and comprehensive programme.

I consider that the first step necessary is to form a survey party headed by a medical man who has had wide experience of leprosy and who is keen on anti-leprosy work and survey work. As assistants he should have four carefully selected Africans of sanitary inspector type, who are acquainted with the vernaculars. The head of the party would train his assistants in anti-leprosy work first at the Ho settlement, and later in course of village leprosy surveys. The party would then carry out a series of sample surveys in selected areas, seeking to ascertain such particulars as the following : the incidence of leprosy ; the proportion of the various types of the disease ; whether the disease is on the increase or decrease or is stationary ; the tribes most affected ; predisposing causes ; the customs of the people regarding leprosy, such as isolating cases, etc.

I would suggest as locations for the first sample surveys, Ho, Kintampo, Mampong, Bekwai, East Dagomba, Navrongo and Cape Coast or some other suitable area in the coastal zone.

Each survey would last for some two or three months and cover an area of 50 to 100 square miles. Clinics would be started, as without treatment it has generally been found impossible to win the confidence of the people and make a successful survey. If in any place as the result of the activities of the party large numbers of patients attend, then when the party passes on to its next centre a suitable member of the party might be deputed to continue treatment, extend the survey and by means of propaganda to induce the villagers to isolate their infectious cases. The place in the survey party of the deputed worker would be filled up by another appointment.

The length of time necessary for the carrying out of these surveys is difficult to forecast, but I would suggest two years in the first place, to be followed by extension if justified by results.

The selection of the personnel, and especially of the head of the party, is of paramount importance. He should be appointed *ad hoc.* If no suitable doctor is available locally a well-trained leprosy doctor might possibly be obtained from India, where this type of work has been in progress for several years.

Several doctors and others have suggested to me that lepers should be forcibly isolated. I would strongly urge the danger of attempting forcible segregation. It has been tried in many places without success as lepers tend to conceal their disease (which in most cases can be easily done), and such attempts at force make subsequent attempts at winning confidence of patients very difficult. Indirect compulsion may however be carefully used through clan chiefs and village headmen.

(2) *Ho Leper Settlement.*—I consider that if the survey shows a high incidence of leprosy in this district, the present settlement should be enlarged and developed as an agricultural settlement along the lines of the Itu and Uzuakoli settlement in Nigeria. Some 500 acres of land would be necessary ; and if this cannot be had at the present site, then a new site should be selected with the requirements mentioned in N.R. V., 3.

I consider that this settlement could best be run by mission doctors (*see* N.R. V., 1). It would be financed by Government as at present, and have a staff as in N.R. V., 2. It would develop along the lines described in N.R. V., 4, 5, 6, 7, 8, emphasis being laid on training and making the settlement a centre for leprosy prevention and general public health work throughout the district. Also the formation of clan of village settlements N.R. VI), infant welfare work (N.R. VII), co-operation with the Educational Authorities (N.R. VIII), using leprosy as a key disease (N.R. IX), training of workers, etc. (N.R. X), should be developed as far as possible.

(3) *An Ashanti Settlement.*—The survey party would soon reveal the need or otherwise for another large agricultural leper settlement in Ashanti, and it would give an indication of the most suitable site.

The present information seems to indicate that there is great need for such a settlement, and that the best site would be somewhere in the neighbourhood of Ejura. It is very important that the settlement be situated in an area of fairly high incidence, so that patients may at first be drawn from these villages and preventive work begun in them on an experimental basis under close supervision from the settlement doctor.

What I have mentioned in connection with Ho regarding the settlement being run by mission doctors, and regarding the site, type of building, work, treatment, training, clan settlement, infant welfare, etc., would apply equally to this settlement.

This settlement would be financed by the central Government.

(4) *Northern Territories.*—There are indications that the incidence of leprosy is very considerable in certain parts of the Northern Territories. There is at present the small leper camp at Yendi, a few out-patients are being treated at Tamale, and there is, I believe, a small leper camp at Navrongo. The work of the survey party suggested would reveal the need or otherwise for a first-class settlement. The large proportion of cases from the Northern Territories in the Kumasi camp, the census returns and reports of medical officers would seem to indicate that there is considerable need for this. I understand that the Native Administrations in the Northern Territories may be in a better financial position to support such a settlement after a period of three years. The settlement if formed should be (except for finance) on the lines suggested for Ho. Meanwhile I would suggest carrying on and gradually developing the present work.

In connection with the three leper settlements suggested, if these are to be run by suitable missions at the expense of Government or Native Administrations, it would be well to constitute Leprosy Boards, as described in N.R. IV., 1.

(5) *Accra and Kumasi and other camps.*—I would propose that these be continued as at present in the meantime. That, once Ho and other settlements are developed along the lines suggested, patients be returned from Accra and Kumasi to their corresponding settlements. If the survey in the south seems to justify another settlement, this should be formed. Otherwise the Accra camp might be kept for local or coast cases.

ACKNOWLEDGMENTS.

I wish to thank the Gold Coast Government for help given and record my gratitude to the Acting Director of Medical Services for kindly arranging my tour, and to him and other medical and health officers for their kind hospitality and the care and trouble they took to place all facilities at my disposal and make my tour successful.

E. MUIR,
Medical Secretary,
British Empire Leprosy Relief Association.

APPENDIX IV.

Report on the Leper Settlement, Ho, 1936.

I.—STAFF.

(*a*) *Medical.*

The Medical Officer, Ho.

One African Superintendent.

One Head Dresser.

Three male Assistant Dressers.

One female Assistant Dresser.

The Head and Assistant Dressers are lepers who have been trained at the Settlement for this work.

(*b*) *Health.*

Three non-leper scavengers are employed.

II.—BUILDINGS AND IMPROVEMENTS.

The buildings have been kept in a good state of repair, but the roofs of the compounds which escaped the fire in January, 1935, are in need of further repair.

III.—WORK DONE.

This year no injections with dyes were given as the results of last year were disappointing. Lepers on admission now receive weekly injections of Avenyl for three months and then have either *Moogrol,* Hydnocarpus oil, or Alepol intramuscularly, or iodised *moongrol* intradermally if they are of the cutaneous type.

Table showing results of treatment :—

Arrested	115
Improved	130
Slightly improved	2
Stationary	46
Worse	30
Died	8

The number of cases arrested rather flatters the treatment, but most of them were " burnt out " on admission and were admitted from the humanitarian point of view, owing to their deformities and ulcers. This type of case is becoming too common at Ho, and it rather suggests that these people are being driven out of their village when they become an uneconomic unit of their community.

It is pleasant to report that most of the children have shown great improvement, but one is not happy in having these children, especially the early nerve cases, playing amongst the " open " cases.

It would be ideal to have these children segregated away from the settlement, to be looked after by women with early nerve lesions.

Thirty-six cases ran away during the year. This is an increase on last year, and is probably due to the medical officer insisting on more work being done by the able-bodied.

IV.—EMPLOYMENT.

The able-bodied farm their own allotments, most of them are very successful in supporting themselves this way. Shoemaking and carpentry are still being done in a small way. The carpenters do all the repairs to the settlement. A small kitchen garden was started during the year, but the patients refuse to eat European vegetables.

V.—MAINTENANCE.

The maintenance allowance is sufficient, and also allows those who work well on the farm to save money.

VI.—EDUCATION.

The Ewe Presbyterian and Catholic schools were amalgamated during the year. Four lepers are teachers and give lessons daily. Adults now sometimes attend the school.

The Ewe Presbyterian and Catholic Churches are well attended on Sundays.

A Scout and Cub Troop has been formed, and all the young male adults and children are showing keen interest. The Gold Coast Branch of the Red Cross Society made a very liberal grant for the uniforms and equipment of this troop.

VII.—SANITATION.

The sanitary conditions of the settlement are still good. Three non-leper scavengers are employed, who look after the pan-latrines, emptying the night-soil into fly-proofed disposal pits. They are also responsible for the incinerators in which all the rubbish of the settlement is burnt.

VIII.—WATER SUPPLY.

This still causes anxiety but if funds were available a constant water supply could be obtained from a small river running beside the Northern boundary of the settlement.

IX.—ECONOMICS.

It was impossible to effect any further economy in administration. Any further reduction in the maintenance allowance would in the long run be more costly as it would lower the patients' resistance to the disease through malnutrition and extend their long stay in the settlement still further.

X.—DATA.

Remaining in settlement, 31st December, 1935	308
New cases admitted during the year	64
Old cases admitted during the year	42
On leave	48
Discharged	12
Ran away	36
Died	8
Remaining in the settlement, 31st December, 1936	310

H. C. ARMSTRONG,
Medical Officer.

APPENDIX V.

MATERNITY HOSPITAL, ACCRA.

Annual Medical Report 1936.

Staff.

2 Medical Officers.

2 Nursing Sisters.

3 Staff Midwives. These are appointed for 12 months only unless specially recommended for a further year.

1 Qualified Midwife undergoing a refresher course.

4 2nd Division Nurses undergoing midwifery training.

23 Pupil Midwives.

8 resigned during the year.

1 Clerk.

8 labourers including a night watchman.

21 pupils were appointed during the year.

During part of the year a third sister was available for district work.

Building.

A new hostel for Pupil Midwives was opened in April, 1936. Dr. Agnes Savage was appointed Warden in addition to her duties as Assistant Medical Officer.

The general health of pupils has been much benefited by living in the hostel and by insistence on regular meals and on regular hours. The standard of work and interest of students is much improved and should steadily rise even higher. The standard of education of those presenting themselves for training is steadily improving.

New Buildings.

A further extension to the septic block exists in Estimates for 1937–38. There is need still for a new labour ward, better out-patient accommodation and more beds. It is proposed to add an extension to the hostel during 1937 in order to enable the number of pupils in training to be increased by 16.

Points of interest in the year's work :—

1. The improvement in training rendered possible by the opening of the hostel for pupils.
2. The steady increase in district work. More work is being done by the trained midwives, and all who have opened up new stations during the year are working satisfactorily.
3. Attendances at the antenatal clinics have been much better although the number of new patients is not much in excess of the year before.
4. There were fewer admissions to hospital and fewer normal deliveries in hospital. This has to be considered in conjunction with the district increase and the fact that the policy is not to admit normal multipare for confinement. Provided that sufficient cases are admitted for the instruction of pupils it is not desirable to aim at the increase of normal hospital deliveries.
5. The death-rate has been high and was due in the main to delay in coming to hospital, and to the desperate condition in which so many bush cases were on admission.
6. One woman was delivered of quadruplets for the second time. All died, as happened on the previous occasion, and she has no living children.
7. The examination of blood of 100 consecutive unselected cases at the antenatal clinic showed sickling of red cells in 13. Two cases of sudden death shortly after the onset of labour showed sickling and no other abnormality.

Work done.

In-patient admissions	1,347
Admitted for antenatal treatment	553
Labour cases	629
Abortions	51
Postnatal complications	79
Living infants	527
Other cases	35
Number of twins deliveries	33
,, ,, triplets	1
,, ,, quadruplets	1

Out-patient attendances.

New antenatal cases	3,826
New postnatal cases	644
New cases attending for other conditions, sterility, puerperal, etc.	186

Total attendances.

Antenatal	16,446
Postnatal	1,652
Other conditions	598
Total	18,696

Four midwives obtained the Central Midwives Board Certificate during the year. Twenty-one pupil midwives-in-training were in residence at the end of year.

Fees collected ... ... £1,392 6s. 3d.

Deliveries in Accra and district.

Deliveries have again increased.

1934	507
1935	627
1936	889

Antenatal admissions.

Abortion, threatened	52
Albuminuria.	
(*a*) Toxæmic	17
(*b*) Chronic nephritic	3
Anæmia.	
(*a*) Macrocytic	14
(*b*) Secondary	3
(*c*) Secondary (associated with hookworm)	16
Antepartum hæmorrhage	4
Circulatory System.	
(*a*) Cardiac	2
(*b*) Varicose veins	1
Debility	26
Digestive System	50
Constipation	4
Dysentery	4
Enteritis	24
Jaundice Catarrhal	3
Stomatitis	3
Helminthiasis	12
Eye Conditions	3
Fœtal Conditions.	
Intrauterine death	5
Malpresentation	2
Genito-urinary System	18
Cervicitis	2
Cystitis	10
Pyelitis	3
Vaginitis	3

Hydatidiform mole	5
Hysteria	3
Insanity	3
Insomnia	1
Labour.	
Threatened premature	3
False pains	6
Malaria	115
Mastitis	3
Observation	72
Poisoning by native medicine	2
Pyrexia of uncertain origin	14
Raised blood-pressure	7
Tonsilitis	3
Vincent's angina	1
Schistosomiasis	8
Septic conditions of the skin and subcutaneous tissues	6
Toxæmia	5
Vomiting	4
Tuberculosis	2
Trypanosomiasis	1
Respiratory Conditions.	
Bronchitis	8
Laryngitis	2
Lobar pneumonia	4

ALBUMINURIA.

Toxæmias.

Fifty-one cases of albuminuria (excluding cystitis, malaria, schistosomiasis), were admitted to hospital in 1936. They are classified as follows :—

Eclampsia 7 with 3 deaths
Toxæmia 24 with 2 deaths
Chronic nephritis 10 with 1 death.

Associated with malaria but persisting after the malaria was controlled : 10 with no death.

Chronic nephritis.

Six cases were delivered in hospital, two after surgical induction. Only one of these going into labour spontaneously at term delivered a living child.

Hyperemesis.

Five cases were admitted. All recovered rapidly. Other cases classed as toxæmia.

Four cases with three deaths.

Insanity.

Three cases.

Anæmia.

Twenty-nine cases of severe anæmia were admitted to hospital and classified as follows :—

Serere macrocytic anæmia :	14 with 4 deaths
Of secondary type	13
Sickle-cell	2 with 2 deaths.

The fatal cases of sickle-cell anæmia died suddenly shortly after the onset of labour. No other cause was found post mortem.

Abortion.

Cases admitted for threatened abortion	52
Number associated with malarial parasites in the blood	8 or 15 per cent.
Cases admitted with abortion complete or incomplete	51
Number associated with malarial parasites in the blood	17 or 34 per cent.

Two cases of incomplete abortion were admitted to hospital very ill and died of shock and hæmorrhage.

One case suffered from B.coli septicæmia and recovered.

Thirteen cases suffered from morbid pueurperia and recovered.

The Wasserman reaction was only tested in 41 cases. Thirty-two per cent were positive. This is the general rate for the country.

Hydatidiform Mole.—Five cases were seen during the year. One died of hyperpyrexia and anæmia and the others recovered.

MATERNAL MORBIDITY.

There were 113 cases of morbid puerperium according to hospital standard plus 53 deaths.

The death-rate is very high and will continue to be so until far more trained midwives are at work in the country.

Most fatalities are due to outside cases being brought in late after the untrained midwife has done her worst, and failed to deliver the woman. Many die within 24 hours of reaching hospital and are in *extremis* on admission.

There were eight cases of septicæmia during the year. The organisms recovered from the blood were :—

Streptococcus—4 cases.

Three occurred after manual removal of placenta, the woman having been delivered outside.

One occurred on the eighth day of the puerperium in a normal case. The possible predisposing cause being a very septic condition of the buccal mucosa. One case died in hospital, one recovered, and two were removed by relatives very ill.

B. Freidlander.

One case was admitted with fever and had a premature still-birth. Recovered.

Staphylococcus Aureus.

One case was admitted with toxæmia and albumen. Premature labour. Removed by relatives very ill.

B. Coli.

One was admitted with obstructed labour. Craniotomy and extraction of child. Recovered.

B. Coli and pneumococcus.

One case following surgical induction and difficult forceps delivery. Died. There were 113 cases of morbidity which were not fatal.

Admitted in labour having had interference outside	53
Following abnormal labour in hospital	26
Following normal delivery in hospital	11
Due to general conditions (malaria, dysentery, etc.	23

MATERNAL MORBIDITY ANALYSIS NOT INCLUDING FATAL CASES.

Septicæmia	6
Sapremia (local sepsis of genital tract)	72
Lobar pneumonia	3
Pyæmia	1
Acute intestinal obstruction	1
Pelvic abscess	1
Dermatitis	1
Albuminuria and septic glands	1
Malaria	8
Dysentery	8
General condition of toxæmia	5
Pyelitis	1
Mastitis	4
Chicken-pox	1
	113

MATERNAL MORTALITY.

Maternal Deaths.

Acute anæmia macrocytic	4
Sickle-cell anæmia	2
Chronic nephritis	2
Eclampsia	5
Meningitis	1
Obstructed labour	6
Peritonitis following dystocia	5
Placenta prævia	7
Pneumonia lobar	1
Pyelonephritis double	1
Ruptured uterus	4
Hæmorrhage and shock	5
Septicæmia	5
Toxæmia	3
Tuberculosis postnatal	1
Typhoid	1
Total	53

Analysis of Infant Deaths.

Prematurity	27
Intracranial injury	6
Congenital debility	19
Asphyxia neonatorum	14
Hæmorrhage of the new-born	3
Congenital malformations	3
Pyæmia following umbilical sepsis	1
Suppurating parotitis	1
Total	74

Analysis of Still-births.

Dystocia	75
Toxæmia of mother	9
Foetal abnormality	4
Prematurity	3
Placenta prævia	3
Unknown (including some probable cases of syphilis)	6
Prolapsed cord	1
Total	101

Operations.

Surgical inductions of labour	57

Forceps Deliveries.

(*a*) Normal vertex presentations	34
(*b*) After manual rotation of occiput	16
(*c*) After reposition of hand	1
(*d*) After reposition of foot	1
(*e*) As P.O.P.	1
(*f*) P.M.P.	1
Total	54

Manual extractions of child in abnormal presentations, etc.

(*a*) Breech with extended arms and disproportion	4
(*b*) Breech after reposition of hand	1
(*c*) Delayed birth of second twin presenting as breech	4
(*d*) Delayed birth of triplet presenting as breech	1
(*e*) Internal podalic version and extraction	16
(*f*) Internal podalic version and pulling down half breech in placenta prævia	5
Total	31

Application of Willet's Forceps	3

Destructive operations on the foetus.

(*a*) Craniotomy	22
(*b*) Craniotomy and embryotomy	1
(*c*) Decapitation	2
Total	25

Abdominal Section.

(*a*) Cæsarean section	9
(*b*) Removal of ectopic gestation	2
(*c*) Laparotomy for—	
1. Ruptured uterus	1
2. Double salpingo-œpherectomy	1
3. Acute obstruction	1
Total	14

Uterine Exploratory Operations.

(*a*) Dilatation and curettage for sterility	6
(*b*) Removal of retained products of abortion	40
(*c*) Manual removal of placenta	24
(*d*) Exploration after delivery	4
(*e*) Dilatation and curettage for hydatidiform mole	4
(*f*) Manual dilatation of os	1
Total	79

Reparative Operations on the Mother.

(*a*) Perineal repair	46
(*b*) Cervical repair	2
(*c*) Vaginal repair	4
(*d*) Repair of vesico-vaginal fistula	1
(*e*) Repair of vaginal stenosis	1
Total	54

Other Operations :

Abscesses incised.

(*a*) Inguinal	1
(*b*) Breast	2
Membranes removed under G.A.	2
Excision of elephantoid labial swellings	1
Excision of cervical polypus	1
Incision of drainage of hæmatometra	1
Circumcision	2
Plugging vagina	1
Total	11

Presentations.

663 including 33 cases of twins and one case of triplets and one case of quadruplets.

Vertex.

L.O.A.	298
R.O.A.	218
R.O.P.	18
L.O.P.	12
P.O.P.	16
Unclassified	15

Breech.

Unclassified	20
L.S.A.	30
R.S.A.	17

Face.

P.M.P.	1
R.M.P.	1
Transverse	12
Brow	5

LABORATORY FINDINGS.

Wasserman Reactions.

Double plus	135
Single plus	35
Plus or minus	29
Negative	308
Total	507

Malaria :

Blood smears—

Showing malarial parasites	420
Showing no malarial parasites	1,273
Percentage showing parasites	24·8%

Stools for examination of Ova.

Positive for Ankylostomes	119
Positive for Ascaris	109
Positive for Tænia	1
Percentage showing Ankylostomes	18·4
Percentage showing Ascaris	16·8
Percentage showing Tænia	·15

X-ray Examinations.

Total	72

Blood Cultures.

Total cultures	36

Organisms.

Hæmolytic streptococcus	1
Streptococcus pneumoniæ	2
Other streptococci	3
Staphylococcus aureus	1
Bacillus typhosus	1
Bacillus coli	3
Friedlander's bacillus	1
Number sterile on culture	24

Urine Cultures.

Total cultured	151

Organisms.

Bacillus coli	46
B. fæcalis alkaligenes	5
Bac. pyocyaneus	4
Staphylococcus	4
Friedlander's bacillus	2
Morgan's No. 1 bacillus	1
Number sterile on culture	89

Cervical and intranterine cultures.

Total cultured	49

Organisms.

Hæmolytic streptococcus	1
Other organisms including unclassified streptococci	46
Sterile on culture	2

Fæces cultured.

Total cultured	70

Organisms.

B. dysenteriæ (flexner)	5
B. pyocyaneus	2
B. fæcalis alkaligenes	2
Morgan's No. 1 bacillus	1
Number showing non-pathogens only	60

Throat swabs cultured.

Total	13
Hæmolytic streptococcus	—
Other organisms	13

Pleural effusions cultured.

Sterile	1
Streptococcus	1

Sickle-cell trait.

An examination of sealed blood films from 100 consecutive unselected cases attending the Prenatal clinic showed sickling in 13. Of 31 selected cases showing a greater or less degree of anæmia 4 or 13 per cent showed the sickle-cell trait.

APPENDIX VI.

Annual Report, Western Province with particular reference to Mining Areas.

The year under review has been one of unprecedented activity especially in respect to the mining industry in the Western Province. Owing to the continued high premium for gold, and the relative high ore value on both banket and quartz reefs, producing companies have rapidly increased their production plant and extended their development.

Several companies which last year were still in the stage of development have now come into production.

Dredging for alluvial gold became established for the first time in the history of the Colony. The Tano Gold Dredging Company are operating two dredges on the banks of the Tano River. The Gold Coast Selection Trust Ltd., have an extensive concession on the Ancobra River, and during the forthcoming year dredging operations will commence at its upper limit.

The only manganese mine in the province (The African Manganese Co., Ltd.) at Nsuta, have almost doubled their output and installed additional extensive plant.

Apart from private individual enterprise, there is no diamond mining.

All this rapid expansion of the mining industry has had far-reaching effects on the distribution of the population ; rapid concentration of both mine labour and civil population into areas of mining activity have produced problems of major sanitary importance which existing organisation and legislation has been unable adequately to deal with.

In the light of experience, flaws and defects in existing legislation including the new Mining Health Areas Regulations, have become apparent.

A good deal of the preliminary work of establishing sanitary control however has been accomplished during the year. The administrative areas defined in the Mining Health Areas Regulations 1935, have for most of the important mining centres been defined and in many cases gazetted.

SUMMARY OF THE SANITARY CONDITIONS IN THE AREAS UNDER MINES CONTROL, WESTERN PROVINCE.

List of Mines and Labour employed.

Company.	Where working.	Labour.	
		Europeans.	Africans.
1. African Manganese Co., Ltd. (*a*) (*b*)	Nsuta	34	1,396
2. Amalgamated Banket Areas, Ltd. (*a*) (*b*) ...	Abbontiakoon	54	2,471
3. Ariston Gold Mines (1929) Ltd. (*a*) (*b*)	Prestea ...	119	4,576
4. Bibiani (1927) Ltd. (*a*) (*b*)	Bibiani ...	71	2,178
5. Gold Coast Banket Areas, Ltd. (*a*) (*b*)	Aboso ...	57	1,400
6. Gold Coast Main Reef, Ltd.	Bondaye ...	10	323
7. Marlu Gold Mining Areas, Ltd. (*a*) (*b*)	Bogosu ...	63	1,946
8. Ntubia Gold Areas, Ltd.	Ntubia ...	7	449
9. South Banket Areas, Ltd. (*a*)	Tamsoo ...	23	536
10. Tano Gold Dredging Co., Ltd. (*b*) (*c*)	Asankrangwa	23	404
11. Tarkwa & Abosso Mines, Ltd. (*a*) (*b*)	Aboso ...	85	3,703
Total	—	547	19,382

(*a*) Denotes mines with a full-time Medical Officer.
(*b*) Denotes mines in production.
(*c*) Denotes alluvial gold dredging.

Total labour employed on 31st December, 1935, amounted to 357 Europeans, and 14,093 native labour, showing a net increase of 189 Europeans and 5,316 native labour during the year.

(*a*) *Grass Areas.*—Clearing in and around the mines and the condition of grass areas generally was good throughout the year in nine out of the eleven mines enumerated.

More advantage is being taken of dhub grass planting on cleared areas. There is still a tendency on many mines to allow overgrowth in and around old disused machine parts—a dangerous practice.

(*b*) *Surface Drainage.*—All the mines have dealt with their surface drainage satisfactorily. Good work has been done in many cases with swamp drainage. An increasing number of earth drains are being replaced by more satisfactory concrete structures. The question of the influence of tailings with relationship to the natural lines of drainage is one that has been taken up, particularly with the management of mines now starting production.

(*c*) *Combustible Refuse Disposal* is dealt with adequately by all the mines. The larger established concerns have erected large permanent destructors. Most of the smaller non-producing mines rely on efficient field-type incinerators. Bibiani (1927) Ltd., and Marlu Gold Minings Areas combine refuse burning with night-soil incineration.

(*d*) *Incombustible Refuse Disposal.*—This is now being more efficiently dealt with on all the mines. Bottles and tins are broken and crushed and disposed of by burial.

(*e*) *Latrine Accommodation.*—A definite all-round improvement on all the mines. Efficiently built concrete latrines in adequate numbers are rapidly replacing the old insanitary structures. The pail system has been adopted on all but one mine. Several septic tank water closets have been installed in European quarters on a number of the producing mines.

These installations are becoming increasingly popular and will probably be adopted in most of the European residential areas of the mines in the near future. Properly constructed and sited they are ideal, as the conditions at most mines are well suited to this type of installation.

(*f*) *Night-soil Disposal.*—Four mines now dispose of their night-soil by incineration. The remainder depend on fly-proofed disposal pits. There is every hope that in the near future all the mines will adopt the more sanitary method of disposal. For a relatively small capital outlay, there is a great saving in the recurrent expenditure on materials and labour involved in constantly constructing new disposal pits.

(*g*) *Water supplies.*—Eight mines have a piped water supply to their European compounds. Of these eight mines, four only extend this service to their native villages. In the case of four mines the source of the water supply is from disused levels of the mine ; two mines utilise impounded spring water ; the remainder depend on collection of rainwater, and on wells.

Only four companies attempt purification of their water supplies. Amalgamated Banket Areas, Ltd. and South Banket Areas, Ltd. rely on filtration only. Tarkwa and Abosso Mine adds uncontrolled hypochlorite solution prior to filtration. Marlu Gold Mining Areas, Ltd. chlorinates after filtration and checks the purity of its supply by regular frequent bacteriological water analysis.

Only one company can be said to possess a really satisfactory water supply. Schemes are, however, on hand by most of the larger producing mines, for large-scale water supplies.

(*h*) *Hospital Accommodation.*—There has been considerable improvement in the provision of adequate hospital accommodation, both for Europeans and Africans. New African hospitals have been built at Marlu and Ariston mines. They are of excellent type. A new African hospital is in the process of erection at Amalgamated Banket Areas, and a new one for Bibiani (1927) Ltd. will be erected as soon as a suitable site is obtained.

The African hospital at Tarkwa and Abosso Mine, as has been previously commented upon, is unsatisfactory in structure and site.

Hospital accommodation for Europeans on all mines possessing a whole-time medical officer can be considered satisfactory.

(*i*) *Medical Attendance.*—Eight of the mining companies possess whole-time medical officers and satisfactory subordinate medical personnel. The Government medical officer, Dunkwa, is retained by the Ntubia and Atta mines, and by the prospecting company, the Gold Coast Selection Trust Ltd. The medical officer, Ariston mine, is retained by the neighbouring Gold Coast Main Reef Company. The medical officer, Marlu Gold Mining Area, Ltd. acts also for the Tano Gold Dredging Co., Ltd.

The mines without resident medical officers have each reasonably well equipped dressing stations in charge of fairly able dispensers, capable of dealing with minor maladies and injuries.

(*j*) *European Housing.*—There has been considerable improvement in the housing of European employees, particularly in respect to the larger producing mines. Gradually the old temporary, insanitary bungalows are being replaced by permanent ones of a good type. More attention is now being paid to the housing of junior grades, but the position in regard to the housing of Italian workers on most of the mines is still very unsatisfactory.

(*k*) *Housing of African Labour.*—Housing schemes have been put into operation by all the producing mines, but in many cases the new houses erected have barely been capable of absorbing the increased labour. All structures are of approved type, and of either concrete block or reinforced concrete construction. Complete rehousing of mine labour and the demolition of the old large insanitary mine villages, legacies of former years of uncontrolled building, can only be a gradual process.

New mining villages have been built at Bibiani, Tamsoo, Fanti and Ariston, and extensions to existing villages, at Abbontiakoon, Tarkwa and Abosso and Nsuta.

Mine labour being free from registration and uncompounded, the companies can only offer housing to their labour. There is nothing to prevent the labour from obtaining accommodation in the slum insanitary towns and villages adjacent to the mines.

Housing of labour in mines in the prospecting and early developing stage is still very unsatisfactory. These mines cannot be brought under the terms of the Mining Health Areas Ordinance until it is definitely known that the companies concerned will go on to production ; yet at the moment there is no legislation to govern either housing or any other problem of sanitary moment. Several companies have willingly submitted lay-outs for temporary mine villages, and permission has been granted for the erection of huts of a very temporary type to be under taken by the companies themselves. These cost little, are under the control of the management and can be demolished if, and when, a permanent future for the mine is decided upon.

Unless a mining company possesses surface rights over a wide area, present legislation cannot prevent slum building in the vicinity of the mine by the so-called civil population.

(*l*) *Bathing Facilities.*—Shaft-head bathing facilities are provided at all mines for European underground staff.

Unfortunately most mines managers are not impressed with the importance of producing shaft-head tepid spray baths and changing facilities for their underground African labour.

The importance of this measure from a health point of view has been stressed in every report.

(*m*) *Markets and Food Supplies.*—Most of the older mines have fairly adequate if somewhat overcrowded markets for which they maintain, and levy market dues. Most of the mine labour obtains foodstuffs from the towns and villages adjacent to the various mines.

The mining companies do not feed their labour.

Prices are high and out of proportion to the average wages of the underground worker. The supply is less than the demand ; Little farming of foodstuffs takes place in the mining areas ; food has to be transported considerable distances from farming areas and both road and railway communications are bad.

The average diet within the purchasing powers of the native labour is unbalanced and deficient in vitamins.

Better communications are at last being established, but the whole question is a wide one and it is suggested one that might engage the attention of both Government and the mining companies.

(*n*) *Slaughter-houses.*—The supply of cattle to the mining areas is both deficient in quantity and quality. Slaughter facilities are deficient in all areas.

(*o*) *Underground Sanitation. Ventilation.*—This varies considerably in the different mines. In most of the mines there is a good deal of rapid development taking place and control of ventilation does not follow concurrently.

Few mines employ forced draught ventilation or air conditioning, but depend on natural convection. In the deeper levels conditions are found to be hot and oppressive, but one cannot dogmatise without scientific investigation.

The same applies to the question of dust hazard in the various mines. Subjective impressions are of little value without dust estimations. " Dry " drilling in hammer stopes by labour hypersusceptible to respiratory infections must have a grave effect on the incidence of silicosis and tuberculosis. The " wet " method of machine stoping is gradually ousting hammer stoping in many of the mines, but some authorities stress the danger of the increased humidity caused by wet drilling, in its predisposing effect towards pulmonary tuberculosis.

Latrine Accommodation.—Considerable improvement in underground latrine accommodation can be recorded on most of the mines. The " approved " type has been adopted by nearly all the companies and is gradually replacing the older unsatisfactory installations.

Drainage in the levels has been on the whole satisfactory. Stagnation of water in the levels apart from being bad mining, greatly increases the risk of ancylostome infestation.

A more liberal use of rock salt in and around latrines and stations is generally to be desired.

First aid equipment with the exception of one mine was definitely deficient.

(*p*) *Mosquito Control.*—There is a definite improvement in mosquito control in most of the mining areas. Increasing areas of swamp have been dealt with. Scrap machinery parts, all potential breeding places and usually neglected, are still far too common.

Sanitary Conditions in Towns and Villages in the Vicinity of Mining Areas.—With the exception of the towns of Tarkwa and Bibiani which are under the control of unofficial Sanitary Boards, which exact sanitary dues, there is practically no organised sanitation in the overcrowded slum towns and villages which so thickly surround all the mining areas.

What little has been accomplished, and that a mere drop in the ocean, has been due to the efforts of the health staff and administrative officers, with the inadequate funds at their disposal. With few exceptions one meets with a barrier of indifference and hostility when endeavouring to persuade chiefs and people to improve their own environmental conditions.

The provisions of the Towns Ordinance where it applies gives little help in the way of legal sanctions, and it is interesting to note that no chief in the Western Province has yet obtained the consent of his people to provide voluntary labour for minor communal sanitation.

In the vicinity of the older established mines, the slum towns and villages are legacies of the past, when mining companies made little or no provision for the housing of their labour.

Demolition in these areas and the rehousing on new lay-outs can be only a gradual process.

In the case of the newer mines still in the stage of prospecting and development, no legal mechanism exists to prevent unauthorised slum building, with the result that in a surprisingly short time mushroom towns and villages of the very worst type spring up in the vicinity of the mines and along its feeder roads.

Few mining companies possess adequate exclusive surface rights and consequently have little or no control over building activities on the greater part of their concessions.

Building is encouraged by the chiefs who derive a considerable income from the collection of rents for the hovels erected.

PROPOSALS FOR FUTURE BUILDING AND SANITARY CONTROL IN MINING DISTRICTS.

(*A*) *Mines in the prospecting and development stage.*—It is essential that there should be health legislation applicable to areas of early mining activity. The Mining Health Areas Regulations No. B26 of 1935 were designed to apply only to permanent established mines. They cannot with any justice be applied to any mine until its future is definitely established. There is thus a vital period totally unprovided for by health legislation.

It is suggested that as soon as any mining company employs more than 100 labourers or commences to sink a shaft or work an existing shaft, Government should have power to declare a temporary mining health area.

For ease of rapid description the mining health area might coincide with the concession boundaries. A temporary " mining area " simple to describe, i.e. a definite radius around the main shaft, could be declared within the mining health area.

The provisions of Regulations B26 of 1935 should apply in whole to that part of the mining health area outside the mining area. Modified regulations should be made applicable to the mining area, on the following lines the provision of a layout for a temporary mine village, permission for the company to build temporaoy houses on the lay-out for its employees, which could easily be demolished and be replaced by permanent houses should the mine become established ; simple regulations for the provision of sanitary structures, water supply, etc. ; power to be given to the mine manager to prevent unauthorised building in the mining area.

A lay-out for an ancillary civil village should be made at the same time, outside the mining area, and all non-mine population subsequently immigrating to the area should be compelled to build on the layout only.

(*B* *Mines the permanency of which has already been decided upon.*—The provisions of the Mining Health Areas Regulations 1935, have already been applied to all mines of this type in the Western Province, and the boundaries of the mining health and mining areas described and in many cases already *gazetted.*

There are now large areas for which Government has accepted sanitary responsibility and the administration of which will have to be decided upon.

The first essential to success is the provision of an adequate inspectorate staff. This has been provided for in the estimates for the coming financial year.

The second essential is the necessity for adequate funds for the sanitation of these large areas. Any increase of funds voted by Government for this purpose can only be regarded as supplementary.

It appears essential that statutory powers will have to be obtained for the constitution of a sanitary board in each mining health area ; such boards being empowered to levy sanitary dues, licences, etc., to meet the cost of essential public services provided and controlled by them, for all towns and villages in the mining health area.

There should be representation of all interests on each board.

For the purpose of unified control and legislation it is suggested that the Town Ordinance should be repealed in the case of all towns to which it now applies in mining health areas, the town of Tarkwa to be the one exception.

The Tarkwa township sanitary board would function also as for the Tarkwa common mining health area.

Building Regulations in mining health areas.—Lay-outs have already been made and others are in the process of demarcation for the rehousing of the occupants of the large slum towns, and for the housing of the large growing influx of population in the mining health areas.

(*C*) *Alluvial Gold Dredging.*—When the Mining Health Area Regulations, 1935, were drafted, the possibility of the establishment of alluvial gold dredging on the Gold Coast was apparently overlooked. One company is now in active production on the Tano river, and a second company has been formed to operate on the Ancobra river.

The question of the housing of labour differs considerably from that obtaining on the lode mines. The dredges are constantly and progressively moving over the area of the concession which consists of a narrow strip on either side of the river.

In the course of every few years camps have to be moved to follow the progress of the dredges.

Under these circumstances it is illogical to expect these companies to build permanent mine villages. Some relaxation of the standard of building appears necessary in the case of companies operating gold dredges.

LODE GOLD MINING AND ITS EFFECT ON THE HEALTH OF UNDERGROUND AFRICAN EMPLOYEES.

1. *Recruitment of African Labour.*—African labour for the gold mines is entirely free and uncompounded. The lure of the higher wages paid to mine labour attracts a constant stream of recruits to the gold mines and there is at present no difficulty in obtaining employees. Apart from the more skilled artisans, most of the recruits come from the Northern Territories and the adjacent Ivory Coast.

There are no recruiting depots in the countries of origin and the first time the prospective employee is seen is when he appears on the mine.

Many of these prospective recruits are in poor condition and undernourished.

After obtaining employment he is either housed in one of the company's houses for which he pays rent, or obtains lodging in one of the numerous adjacent slum towns.

He feeds himself and his family and is in every way free and uncontrolled in his mode of life and movements.

2. *Medical examination.*—In mines possessing a medical officer, each recruit is medically examined prior to employment. This examination is only of a very superficial nature, as on the larger mines an average of twenty recruits are dealt with daily. Only gross major abnormalities are usually detected.

A common practice is for a rejected recruit to engage a substitute to pass the doctor for him. This is very difficult to detect. There is no periodical re-examination of the underground workers.

3. *Food supplies.*—The mine worker is responsible for obtaining his own food supplies. Many of the larger mines have established markets in their mine areas, but there is no control over market prices. As previously mentioned prices are abnormally high in all the mining areas. The essential foodstuffs for a properly balanced diet are entirely beyond the means of the average underground worker.

4. *Working conditions.*—There is no doubt that the average underground working conditions have a prejudicial effect on the health of the African labourer, particularly with regard to the incidence of respiratory disease. There is a wide field for skilled investigation into underground atmospheric conditions as at the moment there is little reliable data available.

The question of dust hazard in the various deep mines and its relationship to the incidence of silicosis and pulmonary tuberculosis is one which demands investigation.

From the very scanty data available, one can however say definitely that the incidence of pulmonary tuberculosis in the mining areas, especially on the banket reefs is abnormally and alarmingly high. With regard to the incidence of silicosis, one is still more in the dark. There are at present no facilities for clinical investigation of the incidence of this disease, and except in the case of fatal mine accidents, practically no autopsies are held on mine labour.

The writer has, however, seen a number of cases strongly suggestive of silicosis both with and without superimposed tuberculous infection.

Pneumonia and other non-tuberculous infections of the respiratory tract constitute the bulk of medical cases in the mining areas.

Adequate shaft-head bathing and changing facilities are deficient on practically all the mines. In many cases labourers coming off shift, hot and sweating, have long distances to cover in reaching their quarters.

Ankylostomiasis.—Infestation with ankylostome nematodes is common in the underground worker. Whilst causing few clinical symptoms, it has undoubtedly a general devitalising effect. There has, however, been considerable improvement in underground sanitation in most of the mines, improved types of latrines now being installed, although greater care is needed in their management and supervision.

Housing.—Still too large a proportion of mine labour are living under the most insanitary environmental conditions. Until the amount of mine labour on each mine becomes stabilised, rehousing can only be a slow process.

Improvement in existing housing appears to be the most promising form of attack at the moment.

5. *Conclusions.*—The mining industry on the Gold Coast is a large and increasing one, with every indication of permanency, and employs a large African labour force.

We possess little precise knowledge of the hazards of the industry upon the health of its African employees.

We do know, however, that the environmental conditions, used in their widest sense, obtaining in the mining areas are favourable for the inception and spread of respiratory disease, and tuberculosis in particular. The data at one's disposal though scanty supports this view. The increase and spread of pulmonary tuberculosis in a highly susceptible race is a problem which might assume the gravest importance in the near future.

It is suggested that a small representative preliminary committee be convened to consider the necessity for a complete investigation, and to discuss the possible terms of reference.

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